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MONDAY, DECEMBER 7, 1987

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

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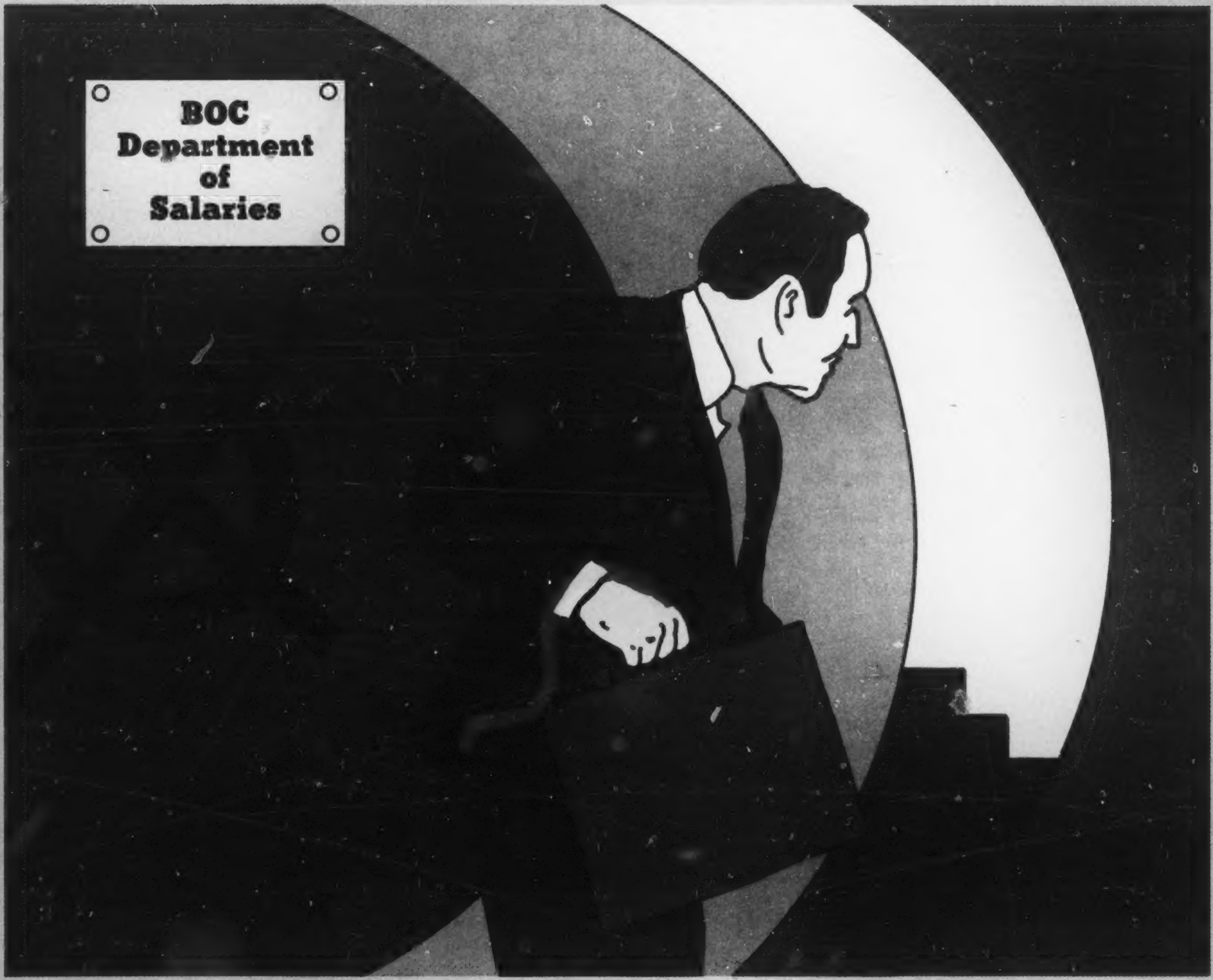

BELL MANAGERS EYE ROSY EARNINGS

Education is the ticket to steady earnings growth at the BOCs,salary survey shows

FCC SETS STAGE FOR SHOWDOWN

Seeks comments on whether to challenge Greene

ISDN ENTERING CRITICAL PHASE, SAYS IRMER

Carriers must prove it is economically viable

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MONDAY, DECEMBER 7, 1987 Volume 213, No. 23

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

BOC
Department
of
Salaries

There's money to be made at the BOCs—at least that's what Telephony's exclusive salary survey found. And it's education that is the key to the gold at the end of the rainbow.
Cover art by Michael Sonnenfeld

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Bell managers eye rosy earnings prospects

BOC middle managers can look forward to steady earnings growth during their careers, even if they don't break into upper management. And it is education that makes that BOC paycheck bulge

CZATDANA INAN, MARKET RESEARCH DIRECTOR
LARRY LANNON, EDITOR

Let's talk facts here.

Facts about money. About careers. About age, gender and education. Facts about the Bell operating companies: What they pay; who they pay; why they pay.

- Education is the key to success for middle level BOC managers.
- Age is a much less potent factor in earnings performance, though age, experience and seniority are closely intertwined.
- By a wide margin, most BOC middle managers are male.
- Middle level BOC managers can reasonably hope to earn $60,000 and $95,000 per year.
- Senior BOC managers do not like to divulge earnings information, even when the survey is kept confidential.

These facts are demonstrated by a salary survey conducted by *Telephony's* Market Research Department this autumn. (See explanation of methodology on opposite page.)

The Money, the People

Money flows up organizational charts. This iron law of financial gravity is true for all businesses, including the BOCs.

TABLE 1 BELL OPERATING COMPANIES
MANAGEMENT LEVELS VS. AGE, EDUCATION AND SALARIES

% Total Sample (Base: 449)		Salary Distribution									Education			
		−$45K	+$45K	+$60K	+$80K	+$95K	+$110K	+$125K	Age in % Level	Median Age	High School	College	Post Grad	No Ans.
21%	Asst. Managers													
	45 or less	44%	6%						50%	40	23%	19%	7%	1%
	Over 45	31%	9%	2%					43%	49	27%	14%	2%	
	No age given	5%	2%						7%		5%	1%	1%	
47%	Managers													
	45 or less	16%	34%	2%					52%	39	16%	26%	10%	
	Over 45	8%	32%	2%					42%	52	25%	13%	4%	
	No age given	2%	2%	2%					6%		2%	2%	2%	
15%	District Managers													
	45 or less		12%	30%					42%	39	9%	18%	15%	
	Over 45		24%	26%					50%	51	8%	32%	11%	
	No age given		3%	5%					8%			3%	5%	
4%	Division Managers													
	45 or less			17%		11%			28%	40			28%	
	Over 45			22%	44%	6%			72%	54	6%	50%	17%	
13%	Asst. Directors/Directors													
	45 or less	2%	19%	8%	3%	3%	3%		39%		2%	20%	17%	
	Over 45		24%	14%	2%	10%	2%		51%	42	8%	19%	24%	
	No age given		5%	3%				2%	10%	53	2%	5%	3%	

The people at the upper levels of the BOC charts are usually males who generally are over 50 years of age. Gender plus age largely determine earnings at BOCs.

The BOC earnings equation isn't quite that simple, however. Two other factors are involved.

First, age and experience are related both logically and in BOC employees' paychecks. But age alone will not ensure a larger paycheck. Experience is what counts at the bank. In addition, women have entered the industry in unprecedented numbers since the early 1970s, so many women managers would only now be approaching 15 years or so of experience.

Second, education is the dominant factor in determining earnings at the BOCs. Education is not necessarily the exclusive province of older, male employees.

Well-educated younger male employees with an adequate amount of experience can optimistically anticipate promotions and pay raises. Women who combine education and experience probably can, too.

The obvious relationship between gender and age on the one hand and earnings performance on the other reflects the current situation but may well distort the dynamic factors reshaping management groups.

On the Table

The stakes in the struggle for promotions and higher salary are nothing to be sneezed at.

For instance, managers, the second most junior of the five categories isolated in Table 1, are usually under 46 years old and usually make between $45,000 and $60,000 per year.

Higher up the organizational chart, 44% of division managers earn between $80,000 and $95,000 per year. A full 17% of division managers earn between $95,000 and $110,000 per year.

At the top of the survey's chart, directors report a wide variety of salaries. In fact, the salary range in this segment is the most diversified of any reporting segment.

Surprisingly, 2% earn less than $45,000 per year. A full 73% earn between $45,000 and $80,000 per year. Another 23% earn between $80,000 and $125,000 per year. And a blessed 2% of directors earn more than $125,000 per year.

Since assistant vice presidents, vice presidents and presidents are senior to directors and presumably earn more, our survey suggests that upper management at the BOCs is being well-compensated.

Break It Down

The most interesting part of the survey is not expressed in dollars. The real BOC earnings story lies in the dynamic factors that shape earnings performance: gender, age and education.

Figure 1 demonstrates the norms for the

Methodology

Telephony's BOC salary survey was conducted by *Telephony's* Market Research Department.

The survey is based on a nationwide sample of 1000 assistant managers through presidents of the 22 BOCs.

Identical and anonymous questionnaires were mailed to the sample on Sept. 14, 1987. As of Oct. 30, 449, or 45%, of the recipients had responded.

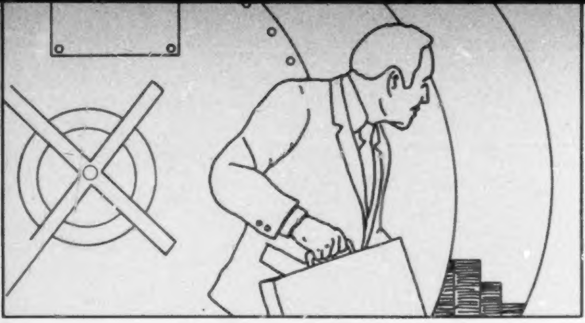
Respondents were asked to identify which part of the country they are from (Northeast, Southeast, Midwest and West). The geographic breakdown of respondents was as follows: One hundred thirty respondents, or 29% of the total, were from the West and another 130 were from the Northeast; 65 respondents, or 14%, were from the Southeast; and 124 respondents, or 28%, were from the Midwest.

The return, with one significant exception, reflected the original sample in terms of management levels and regions. The exception was the senior management response.

Presidents, vice presidents and assistant vice presidents comprised approximately 10% of the total sample. Only two responded. Since the response in this segment was so low, they were not factored into the survey.

Respondents were divided into the five groups represented in Table 1: assistant managers, managers, district managers, division managers, and assistant directors and directors. For purposes of analysis, assistant managers and managers were grouped to put together the information summarized in Figure 2. Managers and district managers were grouped together to compile the information summarized in Figure 3.

This is the second local exchange carrier industry salary survey *Telephony* has published this year. The first was devoted to the Independent segment of the industry (*Telephony, Sept. 1, page 32*).



entire population of respondents.

Figure 2 shows the same factors for both managers and assistant managers.

Figure 3 reviews the same information for district and division managers and Figure 4 covers assistant directors and directors.

In other words, Figure 2 corresponds to the lowest level of respondents, Figure 3 to the middle level and Figure 4 to the highest level.

Gender. Over the total sample, 7% of the respondents identified themselves as women. Another 1% did not answer this part of the survey. In the composite assistant-managers-and-managers category, 8% of the respondents identified themselves as women and 1% did not answer the question. In the composite district-and-division-managers category, all respondents answered the question and 8% identified themselves as women. Among assistant directors and directors, every respondent answered the question and 2% were women.

The survey suggests that there is a core group

FIGURE 1 THE TOTAL BOC RESPONSE
TOTAL SAMPLE
Base = 449

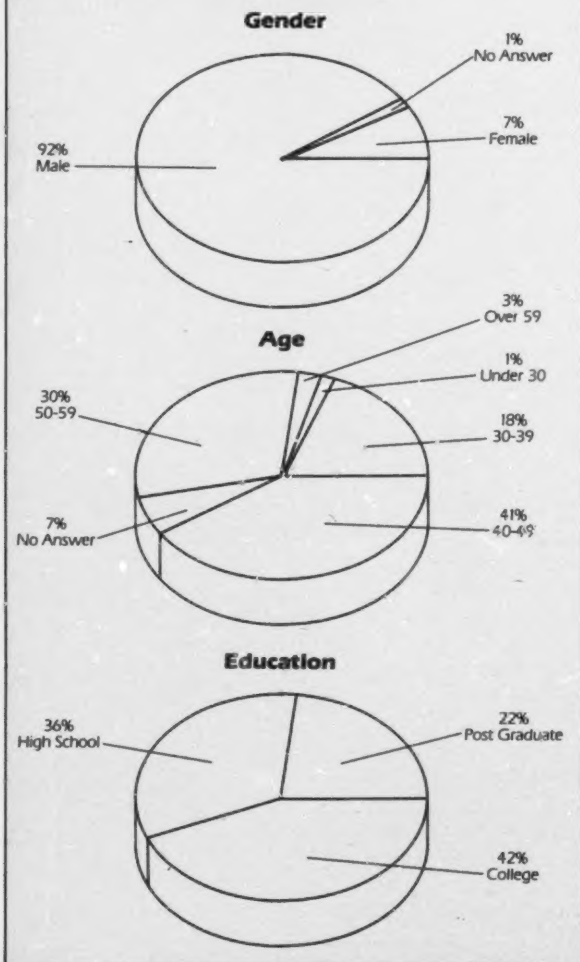
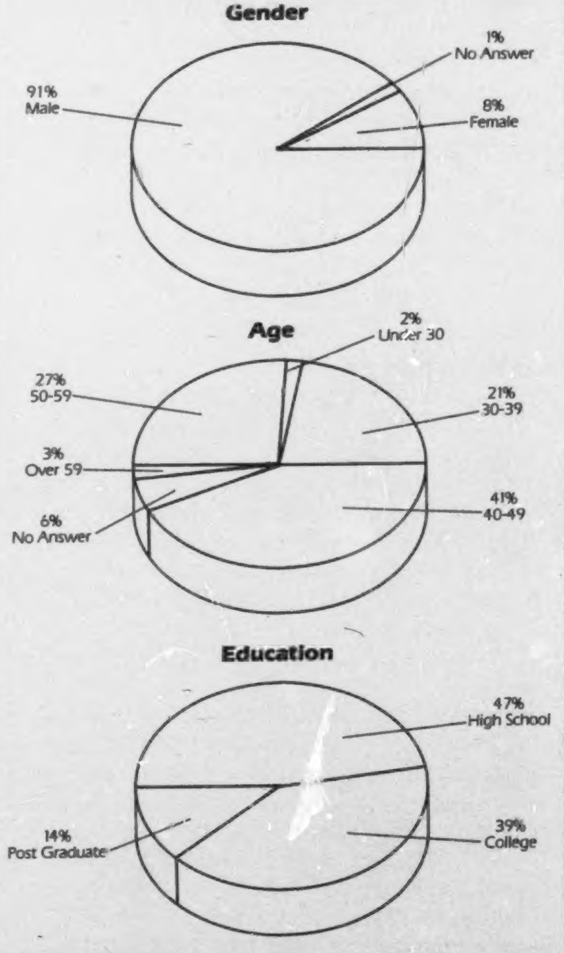


FIGURE 2 THE RESPONSE FROM MANAGERS AND ASSISTANT MANAGERS
Base = 306



of roughly 7% to 8% of women managers at the lower and middle levels of the BOCs. The proportion of women at the upper rung shrinks to 2%.

Given that there is no decline in the proportional representation of women between the first and the second management levels (Figures 2 and 3), gender itself must not be a barrier to advancement at the lower management level.

The drop-off at the upper level may suggest that gender is a barrier at that point. But it also may reflect the importance of experience in landing more senior jobs and the relative lack of experience of women managers at the lower levels.

Barriers based on experience are temporary, assuming that a sufficient number of women managers are hired at the lower levels and progress through the ranks. Our survey suggests that at least the latter condition is being met.

Salary surveys in the next several years

continued on page 45

FIGURE 3 THE RESPONSE FROM DISTRICT AND DIVISION MANAGERS

Base = 84

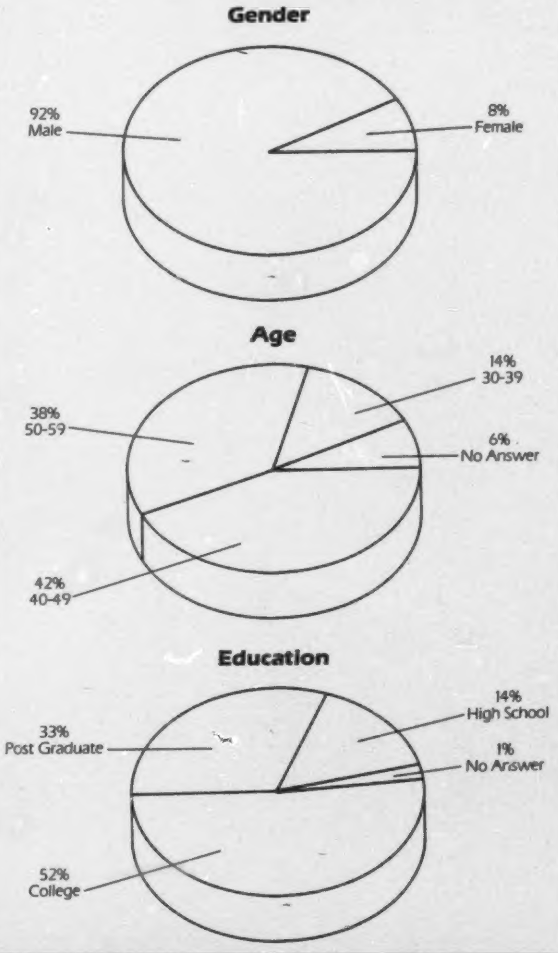
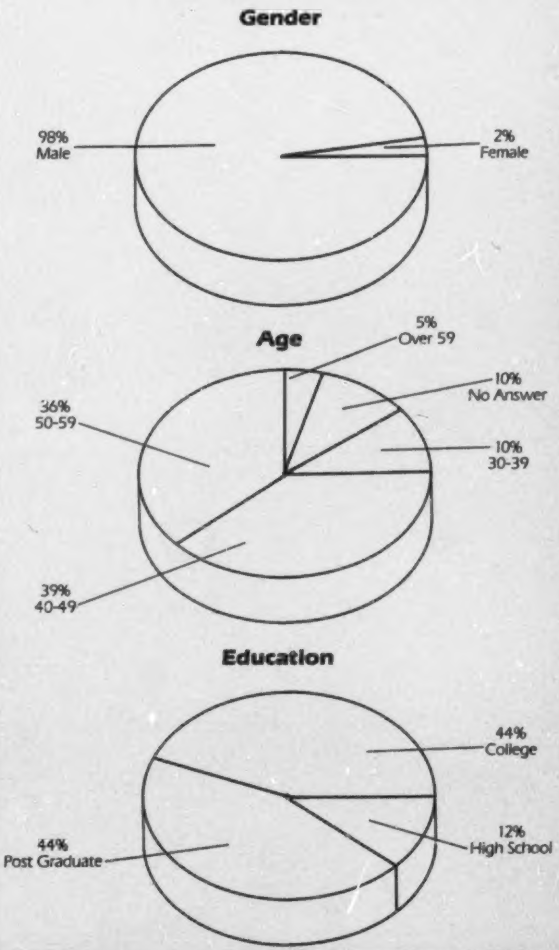
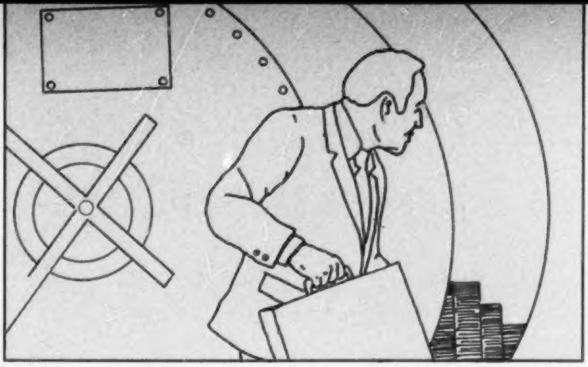


FIGURE 4 THE RESPONSE FROM ASSISTANT DIRECTORS AND DIRECTORS

Base=59





should prove whether or not women managers are being allowed to obtain the experience necessary for steady promotion—and whether or not they are, in fact, getting those promotions.

Age. Of the total sample, 18% of respondents were in their 30s, 41% were in their 40s and 33% were 50 and above.

At the lower two management levels identified in this survey, managers tend to be younger. At the upper level, they tend to be older. The percentage of managers in their 30s declines steadily from 21% to 14% to 10% in Figures 2, 3 and 4, respectively. The percentage of managers in their 40s is stable, moving up from 41% to 42% and down to 39% over the three management groups. The percentage of managers over 50 increases steadily from 30% to 38% to 41% in Figures 2, 3 and 4, respectively.

The uniformity of these results strongly reinforces the perception that BOCs place a great value on experience in promoting managers. Responsibility, experience and earnings go hand-in-hand-in-hand in the Bell environment.

The experience BOCs value most is experience gained in a specific BOC. In other words, BOCs tend to promote not only experienced people but people from within. The questionnaires are replete with respondents who have spent their entire careers with a single BOC.

Education. There is no question about it: Education is the engine that drives earnings performance in the contemporary BOC environment.

The number of managers who did not go beyond high school is largest at the lower of the three management levels identified in Figures 2, 3 and 4. The number of managers who have post-graduate degrees is largest at the highest of the three management levels.

The key to career progress is a college education. More than half—64% to be precise—of all respondents have a college education, compared to 36% who have a high school education. A full 22%—nearly one-quarter—of all respondents have post-graduate degrees.

The further up the organizational chart one goes, the more likely it is the respondent has a college degree and a post-graduate degree. For instance, Figure 2 demonstrates that 53% of respondents categorized as assistant managers or managers have college degrees and 14% have post-graduate degrees. A striking 85% of district and division managers have college degrees and 33%, or one-third, have post-graduate degrees.

At the highest level of the survey, covering directors and assistant directors, the numbers are even more eloquent. A full 88% have college degrees and 44% have post-graduate degrees. Nearly nine out of 10 managers in this category have college degrees and fully half of the college graduates went on to complete post-graduate work.

Want to become a successful BOC manager? Go to school and stay there for a long time. Then get experience with a single BOC.

Follow that formula, and the odds are you'll succeed eventually, whether you are a woman or a man. ☐

What They Like About Their Work

BOC managers are motivated by many things.

Respondents to *Telephony's* salary questionnaire were asked to identify which part of their job was most important to them. The answers are all over the lot.

Many respondents say providing quality service is most important. Others say creating a rewarding environment for the people they supervise is most important.

A significant group say staying on top of new technology tops their priority list. Others say meeting their manifold management responsibilities comes first. Some stress the freedom to innovate as their major focus. And still others acknowledge that their most important priority is wielding authority.

Two responses are particularly noteworthy.

A gentleman from the West wrote a long and thoughtful response. He begins his response with a forthright statement: "These days, just being able to have a job to keep coming to is real important."

Another respondent, undoubtedly busy, wrote a one-word answer when asked what was most important about his job.

"Power," he says. And probably means every word.

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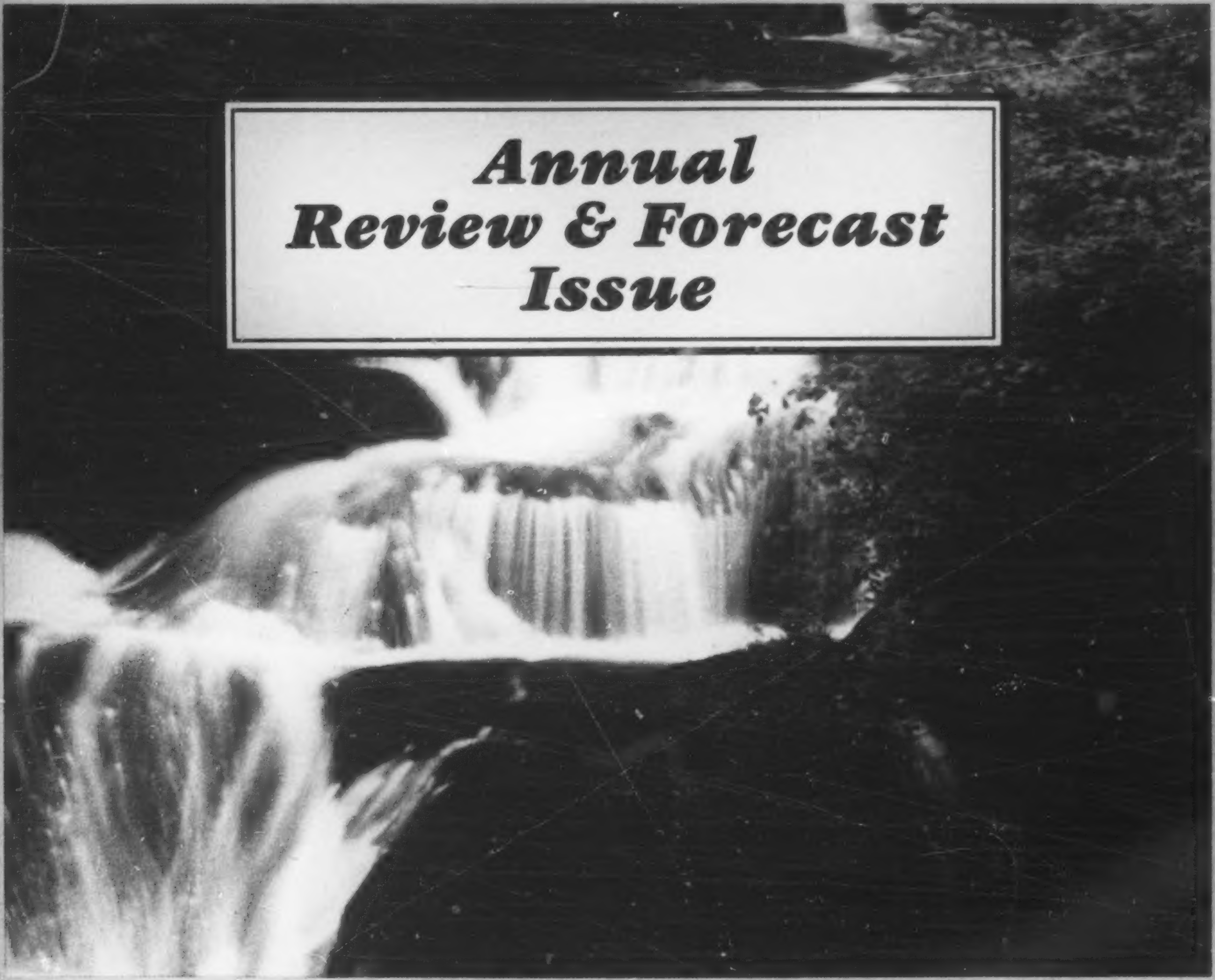

Annual Review & Forecast Issue

SPENDING FALLS GENTLY IN 1988

Aggregate spending by carriers will drop by less than 0.5%, a small but significant shift

ILL. BELL, McDONALD'S WRITE ISDN CHAPTER

Makes first use of technology in daily operations

SWEDISH LINK A WORLD FIRST

Integrates leased data lines, phone network

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Annual Review & Forecast Issue

Telephony's annual review and forecast reveals that aggregate spending by local exchange carriers and interexchange carriers will gently fall in 1988. Cover photo by Jurgen Schmitt, The Image Bank

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The leaders of the Bell regional holding companies talk about what 1988 holds in store for them

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Executives from Independent telephone companies provide their insights on this year

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Spending falls gently in 1988

Aggregate spending by local exchange carriers and interexchange carriers will drop by less than 0.5% in 1988, a small but possibly significant shift in the 1980s' pattern of flat growth. Central office and various forms of transmission equipment continue to be the big ticket items. RHC spending will not decline significantly next year

LARRY LANNON, Editor, and CZATDANA INAN, Marketing Development and Research Director

Spending in the telecommunications industry will go gently down in 1988.

The decline will be small indeed. Spending in 1988 will dip by less than 1%, 0.4% to be more precise.

But after a couple of years of flat growth and a small decline last year in industry expenditures, 1988 may mark the consolidation of a more austere cycle within the industry.

However, 1988 also is expected to see a slowing in the decline of industry expenditures from roughly 2% in 1987 to less than 1% this year.

Sharper declines are expected in 1989.

These conclusions are based on information gathered by *Telephony*'s Market Research Department.

Break It Down

Expenditures by both local exchange carriers, or LECs, and interexchange carriers, or IXCs, will decrease from $24.55 billion last year to $24.45 billion, a $98 million drop-off.

This will mark the second time since the 1984 break-up of the Bell System that total industry expenditures will decline.

Aggregate LEC and IXC expenditures had been $21.90 billion in 1984. They soared in 1985 to $25.06 billion. In 1986, they hovered at $25.04 billion, nearly the same level as in 1985.

Last year, industry expenditures dropped for the first time since divestiture.

Spending declined by roughly $490 million to $24.55 million in 1987. This year, expenditures dropped again but not as far.

There is one constant in tracking industry expenditures. The local exchange industry continues to play the much larger role in the industry's purchasing equation.

In 1988, the interexchange industry will spend $4.63 billion this year (Table 1). The local exchange industry will spend $19.82 billion on goods and services (Table 2).

So the LECs will account for roughly 81% of total industry expenditures. The IXCs account for the remaining 19%.

The LEC segment of the industry is responsible for the overall industry downturn in expenditures. This is predictable enough, given the fact that the LECs account for four-fifths of all industry expenditures. In fact, the IXCs will increase their spending in 1988.

IXC expenditures will go from $4.54 billion last year to $4.63 billion this year, an increase of roughly $87 million.

IXC expenditures since divestiture have grown from approximately $4 billion in 1984 to $4.98 billion in 1985 to an all-time high of $5.02 billion in 1986. Last year saw a sharp decline to $4.54 billion, a 10% spending drop offset in part by the 20% increase anticipated in 1988.

Methodology

The information in this report is based on exclusive primary research conducted by *Telephony*'s Market Research Department in November and December 1987.

Each of the Bell operating companies and Top 18 Independents were queried on their network expansion budgets for 1984-89 and the anticipated percent of the 1988 budget to be spent for equipment vs. capitalized labor in 10 major plant and facility categories. In addition, the LECs were asked to report installed lines, the current distribution of lines and switches by technology, their current fiber optic facilities, fiber miles installed 1984-87 and projections for 1988 and 1989. The interexchange carriers were queried only on their 1984-89 network expansion budgets.

Any estimates that appear in this report have been cross-checked by *Telephony*'s Market Research Department against filings by the LECs and IXCs with the Federal Communications Commission, the Securities and Exchange Commission and the *Telephony* Market Research Department database and are believed to be accurate within 5% plus or minus of the estimated amounts.

However, IXC expenditures are expected to drop to $4.53 billion next year.

The Big Top

But the real action is in the LEC industry.

The LECs will spend $19.82 billion in 1988. Last year, the LECs spent slightly more than $20 billion. So the LEC segment of the industry will cut its expenditures by $185 million this year, or roughly 1%.

The net decline in telecommunications industry spending is directly attributable to that 1% decline in LEC expenditures.

Total industry expenditures will be down by approximately $98 million, but LEC expenditures will be cut by $183 million.

A closer look at the figures shows that the decline in LEC expenditures is largely attributable to spending decisions made by Independent companies.

The LEC industry has three components: the Bell regional holding companies, or RHCs; the 18 largest Independent companies, or Top 18 Independents; and the more than 1000 smaller Independent companies, or Other Independents. The RHCs are far and away the largest and the Other Independents are easily the smallest of the three components.

The RHCs will account for expenditures of $14.06 billion in 1988, or approximately 71% of aggregate LEC expenditures. The Independent industry will spend $5.76 billion in 1988, roughly 29% of the industry's total.

Within the Independent industry, the Top 18 Independents will spend $4.9 billion and the Other Independents will spend $864 million in 1988.

The Top 18, thus, will account for 85% of the Independent industry's expenditures and roughly 25% of the LEC industry's outlays in 1988. The Other Independents will account for roughly 5% of total LEC expenditures and 15% of Independent industry expenditures in 1988.

continued on page 39

TABLE 1 INTEREXCHANGE CARRIER BUDGETS 1984-1989

	1984	1985	1986	1987	1988	1989	AVERAGE 1984-86	AVERAGE 1987-89
AT&T Communications	$1,341.9	$2,108.9	$2,556.8	$2,358.2[a]	$2,947.8[b]	$3,000.0[b]	$2,002.5	$2,768.7
MCI	1,157.2	1,000.1	950.0	800.0	700.0	600.0	1,035.8	700.0
US Sprint	1,467.1	1,687.0	925.0	900.0	850.0*	800.0*	1,359.7	875.0
ALC Communications	22.7	36.9	36.0	36.0	34.0*	32.0*	31.9	34.0
NTN	4.5	150.0	550.0	450.0	100.0	100.0	234.8	216.7
	$3,993.4	$4,982.9	$5,017.8	$4,544.2	$4,631.8	$4,532.0	$4,664.7	$4,594.3

Source: Telephony/Market Research

* Telephony estimates

a: based on $1,768.7 million spent as of Sept. 1987.

b: based on AT&T announced increases.

Spending *continued*

Given the industry's economic topography, the cause behind the small but significant projected decline in 1988 industry expenditures becomes much clearer.

In 1987, the RHCs spent $14.06 billion, a figure that will shrink very slightly to $14.05 billion this year. The approximate decline in 1988 RHC expenditures will only be $6 million. That figure equates to a decline of less than 0.04%—less than one-tenth of 1%—compared to year-previous outlays.

The Top 18 Independents will spend roughly $4.9 billion this year, a drop of $150 million, or roughly 3%, from the $5.05 billion spent by that group last year.

The Other Independents, like their larger Independent relatives, also will reduce their 1988 spending by about 3%, from $891 million in 1987 to $864 million

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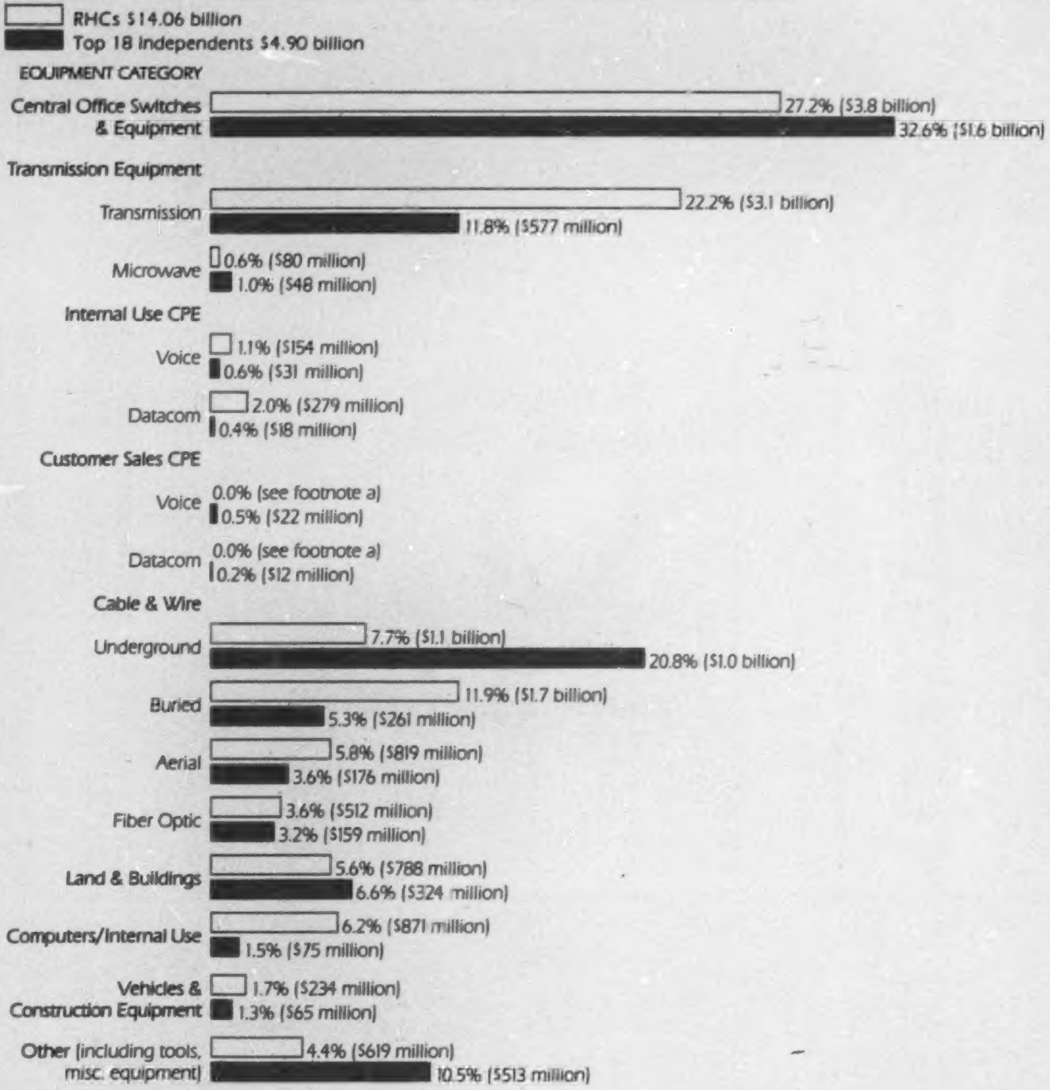
FIGURE 1 LECs' DISTRIBUTION OF 1988 CAPITAL EXPENDITURES*



Source: Telephony/Market Research

* Equipment and capitalized labor

a: For the RHCs, voice and data customer equipment is handled by CPE subsidiaries this year, a spending reduction of roughly $27 million.

The crucial role played by the Top 18 Independents is demonstrated further by an analysis of the $183 million differential between 1987 and 1988 LEC spending. The RHCs account for roughly $6 million, or about 3%, of the $183 million differential. The Other Independents account for $27 million, or 15%, of the differential. The Top 18 Independents account for a whopping $150 million, or slightly more than 82%, of the differential.

The picture comes into focus. The large Independents are driving the change in the industry's spending picture.

The IXC portion is the only segment of the indus-

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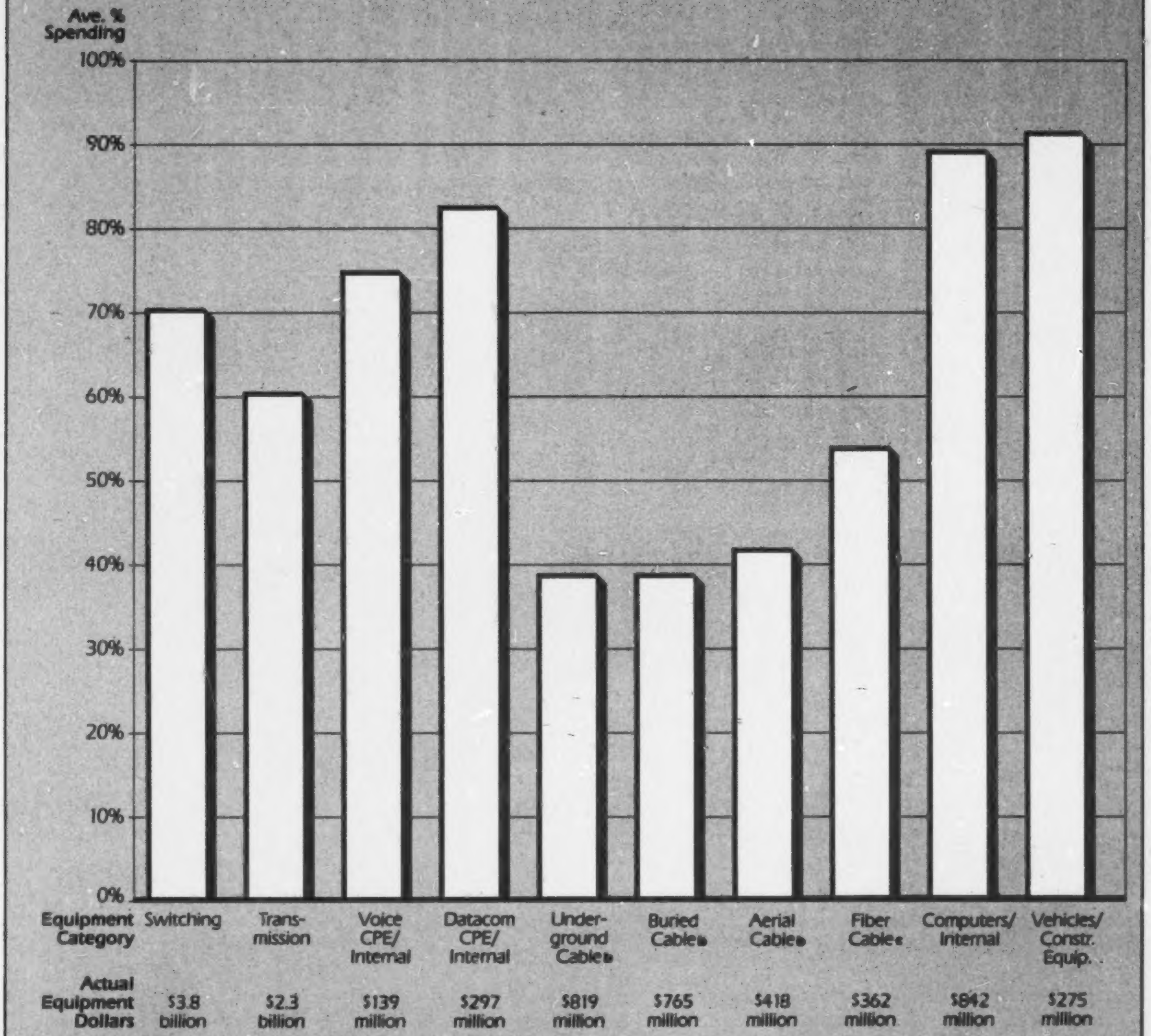
FIGURE 2 % OF LEC 1988 BUDGETS TO BE SPENT FOR EQUIPMENT ONLY[a]



[a] LEC budgets are comprised of capitalized labor and actual equipment expenditures. Figure 2 examines the average share of budget that represents equipment acquisitions in 10 major plant categories. For example, the RHCs and Top 18 Independents will spend $5.4 billion in 1988 for central office switching and related equipment (see Figure 1). Of that, 70% or $3.8 billion represents equipment and 30% or $1.6 represents capitalized labor.

[b] wire & cable (metallic) and related materials

[c] including related materials

try with expenditures that will grow in 1988. The RHC segment, easily the most important segment of the industry in terms of expenditures, will reduce its expenditures by a barely perceptible amount. The Other Independents will reduce their spending by about 3%.

But the Other Independents are so small that their net decrease in expenditures affects overall industry totals only marginally.

The Top 18 Independents will play the key role. They also will decrease their expenditures next year by 4%. Because of their substantial economic muscle, the decisions made by Top 18 Independent companies will move the industry total down in 1988.

And a single Independent is largely responsible for the downturn.

Purchasing decisions are made by companies, not industry segments. Individual companies and their managers are the active elements in the industry's economic chemistry.

1988 RHC Spending Scorecard (% Change)

1. Pacific Telesis	+7.5%
2. Nynex	+0.3%
3. Southwestern Bell	0.0%
4. Bell Atlantic	0.0%
5. BellSouth	-0.3%
6. U S West	-3.0%
7. Ameritech	-4.0%

RHC Big Spenders (name, total in billions of dollars, portion of RHC total)

1. BellSouth	2.95	21%
2. Nynex	2.29	16%
3. Bell Atlantic	2.27	16%
4. Ameritech	1.79	13%
5. Pacific Telesis	1.70	12%
6. U S West	1.66	12%
7. Southwestern Bell	1.40	10%

Only two of the seven RHCs plan to increase expenditures this year (Table 2). Two RHCs will spend the same amount as last year. The three remaining RHCs will reduce their expenditures.

Pacific Telesis plans the largest spending increase among the RHCs in 1988. Pacific Telesis, which spent $1.58 billion last year, will spend $1.7 billion this year. That $120 million differential represents a robust 7.5% increase.

Nynex will spend roughly 1% more in 1988 than it did in 1987. Nynex's 1987 outlay was $2.26 billion. In 1988, Nynex will spend $2.29 million, a $30 million increase.

Southwestern Bell will spend $1.4 billion in 1988, the same amount it spent last year.

Bell Atlantic also will hold steady. It spent $2.273 billion last year. This year, Bell Atlantic will spend $3 million less, or $2.270 billion, a microscopic difference of 0.1%.

U S West will cut its expenditures by $60 million this year. It spent $1.72 billion in 1987. This year, U S West will spend $1.66 billion, a 3% drop-off.

Ameritech will cut its 1988 spending by 4%. The Midwestern giant spent $1.87 billion in 1987 and will spend $1.79 billion this year, a cut of $80 million.

In terms of total expenditures, the four RHCs east of the Mississippi continue to out-spend the three Western telecom behemoths by a wide margin. Nynex, Bell Atlantic, BellSouth and Ameritech together account for 66% of all RHC expenditures.

BellSouth will spend $2.95 billion in 1988, a full 21% of the $14.06 billion the seven RHCs will spend.

Nynex will spend $2.29 billion in 1988, or 16% of the RHC total.

Bell Atlantic will spend $2.27 billion this year, also 16% of the RHC total.

Ameritech will spend $1.79 billion, 13% of the RHC total.

Pacific Telesis will spend $1.70 billion, 12% of the RHC total.

U S West will spend $1.66 billion, also 12% of the RHC total.

Southwestern Bell will spend $1.40 billion in 1988, 10% of the RHC total.

Top 18 Spenders

Among the Top 18 Independents, nine will increase their expenditures next year.

United Telecom will spend $638 million next year, up 1% from the $632 million this Independent spent last year.

Contel will increase its expenditures by 3.5%, from $489 million in 1987 to $506 million this year.

Southern New England Telephone will increase its

continued on page 46

outlay from $369 million in 1987 to $380 million this year, a 3% growth rate.

Puerto Rico Tel will boost its expenditures by 4.5%, from $220 million last year to $230 million in 1988.

Rochester Telephone will spend $88 million in 1988, up 3.5% from $85 million in 1987.

TDS will increase its spending by an eye-popping 21%, from $33 million in 1987 to $40 million in 1988.

Pacific Telecom will increase its spending by a healthy 8%, from $39 million in 1987 to $42 million in 1988.

Top 10 LEC Spenders (total in billions of dollars)

1. BellSouth	2.95
2. GTE	2.36
3. Nynex	2.29
4. Bell Atlantic	2.27
5. Ameritech	1.79
6. Pacific Telesis	1.70
7. U S West	1.66
8. Southwestern Bell	1.40
9. United	0.64
10. Contel	0.51

Five Biggest LEC Gainers in 1988

1. TDS	+21%
2. Pacific Telecom	+8.0%
3. Pacific Telesis	+7.5%
4. Puerto Rico Tel	+4.5%
5. C-TEC	+4.0%

Five Biggest LEC Cutters in 1988

1. Anchorage Tel	-29%
2. Cincinnati Bell	-14%
3. GTE	-7%
4. Ameritech	-4%
5. U S West	-3%
Centel	-3%
Alltel	-3%
Century	-3%
Lincoln	-3%

C-TEC's outlay will go from roughly $28 million last year to $29 million in 1988, a 4% boost in spending.

Citizens Utilities will spend $36 million in 1988, up 3% from the $35 million it spent last year.

Downward Bound

GTE, the giant of the Independent industry and one of the giants in the entire telecommunications industry, will slash its expenditures by 7% this year. GTE spent $2.54 billion in 1987. In 1988, the company plans to spend $2.36 billion, a $180 million cutback.

Since the entire LEC industry will cut its 1987 level of expenditures by $183 million in 1988, GTE's $180 million cut represents nothing less than 98% of the total decrease in LEC spending. Thus, the Connecticut-based giant is doing more than any other company to stamp its mark on the industry's spending picture for 1988.

Centel, which spent $187 million last year, will reduce its 1988 outlay by about 2% to $184 million, a $3 million differential.

Alltel will cut its expenditures by $5 million, or 3%, this year. Alltel spent roughly $161 million last year and will spend about $156 million in 1988.

Cincinnati Bell will cut its expenditures by $13 million and slash spending by 14%. Cincinnati Bell spent roughly $95 million last year and will spend about $82 million in 1988.

Century will cut its $38 million 1987 outlay to $37 million this year, a 3% reduction.

Lincoln Tel will spend $34 million in 1988, down 3% from the $35 million it spent last year.

Anchorage Tel will chop its expenditures by a whopping $11 million, or 29%, from $38 million in 1987 to $27 million in 1988.

CP National will reduce its expenditures from $21 million in 1987 to $20 million in 1988, a 5% reduction.

Illinois Consolidated will hold steady. It spent $8 million in 1987 and will again this year.

Glance at IXCs

Among the major IXCs, AT&T will increase its expenditures from $2.36 billion last year to $2.95 billion in 1988. That $590 million differential represents a whopping 25% increase.

AT&T's IXC competitors all intend to cut their 1988 expenditures.

MCI, which spent $800 million last year, will spend $700 million this year, a $100 million, or 12.5%, reduction.

US Sprint, which spent $900 million last year, will spend $850 million this year, a $50 million, or 5.5%, cut.

ALC Communications spent $36 million last year. It will spend $34 million next year, a $2 million, or 5.5%, reduction.

continued on page 50

TABLE 2 LOCAL EXCHANGE CARRIERS' POST-DIVESTITURE BUDGETS

EQUIPPED LINES	TOTAL LOCAL SWITCHES		POST-DIVESTITURE CONSTRUCTION SPENDING ($ millions)							
JUNE 30, 1987			ACTUAL			ESTIMATED				
			1984	1985	1986	1987	1988	1989	AVERAGE 1984-86	AVERAGE 1987-89
		REGIONALS								
		Ameritech								
4,597,903	191	Illinois Bell	500.6	673.6	653.5	605.0	599.1	580.3	609.2	594.8
1,779,580	164	Indiana Bell	196.4	207.5	234.9	231.8	192.7	208.7	212.9	211.1
4,549,574	384	Michigan Bell	427.0	464.0	525.0	510.0	535.0	527.0	472.0	524.0
3,579,745	243	Ohio Bell	355.6	342.9	386.2	359.1	297.4	298.2	361.6	318.2
1,859,640	123	Wisconsin Bell	203.6	208.5	194.8	165.9	163.0	158.0	202.3	162.3
16,366,442	1,105		1,683.2	1,896.5	1,994.4	1,871.8	1,787.2	1,772.2	1,858.0	1,810.4
		Bell Atlantic								
6,620,000*	597*	C & P Companies	777.7	929.2	970.8	950.6*	940.0*	940.0*	892.6	943.5
5,059,600	208	New Jersey	538.8	519.6	587.9	560.0*	555.0*	555.0*	548.8	556.7
5,697,300	440	Bell of PA	532.0	629.0	709.0	762.0	775.0*	775.0*	623.3	770.7
17,376,900	1,265		1,848.5	2,077.8	2,267.7	2,272.6	2,270.0	2,270.0	2,064.7	2,270.9
		Bell South								
7,678,703	938	South Central	935.1	1,045.1	1,121.8	1,141.5	1,185.0	1,145.3	1,034.0	1,157.3
8,850,000*	630	Southern Bell	1,321.3	1,594.9	1,695.7	1,815.7	1,762.9	1,797.0	1,537.3	1,791.9
16,528,703	1,568		2,256.4	2,640.0	2,817.5	2,957.2	2,947.9	2,942.3	2,571.3	2,949.1
		Nynex								
10,205,000*	675	New York	1,108.3	1,248.6	1,325.5	1,395.0	1,454.3	1,420.8	1,227.5	1,423.4
5,396,000*	656	New England	769.2	852.9	759.1	861.9[b]	836.0*	810.0*	793.7	836.0
15,601,000	1,331		1,877.5	2,101.5	2,084.6	2,256.9	2,290.3	2,230.8	2,021.2	2,259.3
13,670,000*	950*	Pacific Telesis[a]	2,040.3	2,163.1	1,682.5	1,582.0*	1,700.0*	1,700.0*	1,962.0	1,660.7
11,145,000*	1,315	Southwestern Bell	1,719.9	1,952.3	1,863.8	1,400.0	1,400.0	1,400.0	1,845.3	1,400.0
		U S West								
6,565,021	809	Mountain Bell	899.6	1,002.2	883.3	900.0*	880.0*	850.0*	928.4	876.7
3,471,958	661	Northwestern Bell	409.3	531.4	428.0	467.1	454.4	427.1*	456.2	449.5
2,852,709	256	Pacific NW Bell	351.0	393.0	383.0	356.0	328.0	320.0	375.7	334.7
12,889,688	1,726		1,659.9	1,926.6	1,694.3	1,723.1	1,662.4	1,597.1	1,760.3	1,660.9
		TOP 18 INDEPENDENTS								
12,632,000	2,749	GTE	2,137.4	2,381.4	2,504.4	2,538.5	2,361.8	2,273.2	2,341.1	2,391.2
3,771,282	1,101	United	509.0	564.0	550.0	632.0	638.0	652.0	541.0	640.7
2,491,733	2,525	Contel	469.8	439.4	464.6	488.8	506.3	525.0*	457.9	506.7
1,984,330	148	SNET	214.3	246.3	294.9	368.5	380.0*	360.0*	251.8	369.5
1,517,801	269	Centel	162.8	165.6	179.2	186.7	183.5	165.3	169.2	178.5
22,397,146	6,792		3,493.3	3,796.7	3,993.1	4,214.5	4,069.6	3,975.5	3,761.0	4,086.5
1,022,000	486	Alltel	146.3	163.4	164.7	160.7	155.5	143.6	158.1	153.3
880,646	57	Cincinnati	59.5	85.2	79.7	95.3	82.2	78.0	74.8	85.2
772,708	135	Puerto Rico Tel	109.3	114.8	162.0	220.0	230.0	160.0	128.7	203.3
546,000	76	Rochester	56.8	94.4	84.9	84.5	88.4	78.4	78.7	83.8
256,706	154	Century	37.0	39.0	40.0	38.0	37.0	35.0	38.7	36.7
3,478,060	908		408.9	496.8	531.3	598.5	593.1	495.0	479.0	562.2
245,000*	206	TDS	28.1	27.7	32.3	33.3	39.5	32.3	29.4	35.0
229,284	133	Lincoln	30.4	30.8	27.6	35.1	34.1	29.0	29.6	32.7
251,200	185	Pacific Telecom	30.8	41.3	45.0	39.1	41.6	46.9	39.0	42.5
196,000	71	C-TEC	15.0	23.0	24.9	27.5	28.8	25.6	21.0	27.3
112,985	8	Anchorage	41.7	53.2	57.0	37.8	26.9	26.0	50.6	30.2
88,559	35	Illinois Cons.	11.0	12.0	13.0	8.0	8.0	8.0	12.0	8.0
107,620	47	Citizens Ut.	21.1	19.3	27.3	35.4	36.3	36.0*	22.6	35.9
75,000*	30*	CP National	15.2	19.2	20.5	21.0*	20.0*	20.0	18.3*	20.3*
1,305,648	715		193.3	226.5	247.6	237.2	235.2	223.8	222.5	232.1
		LEC's TOTAL								
103,577,733	9,240	**7 Regionals**	13,085.7	14,757.8	14,404.8	14,063.6	14,057.8	13,912.4	14,082.8	14,011.3
27,180,854	8,415	**Top 18 Independents**	4,095.5	4,520.0	4,772.0	5,050.2	4,897.9	4,694.3	4,462.5	4,880.8
6,478,020*	1,485*	**Other Independents**	722.7	797.6	842.1	891.2	864.3	828.4	787.5	861.3
137,236,607	19,140		17,903.9	20,075.4	20,018.9	20,005.0	19,820.0	19,435.1	19,332.8	19,753.4

Source: Telephony/Market Research

* Telephony estimates

a: Combined Pacific Bell and Nevada Bell

b: Based on reported spending of $574.6 million through 8/87

NTN, which spent $450 million last year, will cut its spending to $100 million this year, a $350 million, or 78%, reduction.

(*Telephony* will publish a detailed analysis of the IXC industry in our annual overview of the industry. That article will appear in our March 14 issue.)

The Money Trail

Where is all this money going?

Telecommunications service providers are taking advantage of technological progress on several fronts, as their expenditures demonstrate. The big ticket items continue to be central office switches and equipment, transmission equipment, and cable and wire, particularly underground cable and wire. But they also are spending large sums on customer premise equipment for both internal and external uses, data communications, land and buildings, computers for internal uses and vehicles and construction equipment (Figure 1).

As Figure 2 illustrates, LECs plan to spend $3.8 billion in 1988 on central office switches and equipment, far and away the largest expenditure for any one technology.

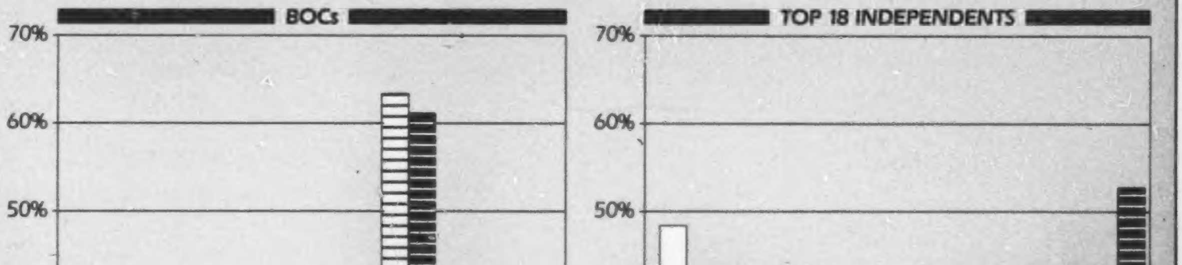
The LECs also plan to spend $2.3 billion on transmission equipment.

Figure 2 also demonstrates the portion of LEC expenditures in each major technological category that goes for equipment and the portion that goes for capitalized labor. For instance, slightly more than 70% of all LEC expenditures on switching is for the equipment. By comparison, less than 40% of the expenditure on underground cable is for the cable. The rest is for capitalized labor.

As would be expected, the industry's drive to make the public network all-digital has continued during the past couple of years and is expected to continue in 1988 (Figure 3).

The most striking recent change is the rapid increase in the installation of digital switches for

FIGURE 3 LECs' DIGITAL SWITCHES & LINES: 1986 VS. 1987



* includes host and remotes

Source: Telephony/Market Research

local applications. Correspondingly, telephone companies continue to install digital transmission capability as rapidly as possible.

However, many RHC telco customers continue to be served by electronic/analog switches and transmission facilities.

Many Independent customers continue to be served by step-by-step switches and appropriate transmission equipment.

Prospects

The outlook for 1989 is for the decline in industry expenditures apparent in the past two years to accelerate. And the Top 18 Independents will continue to drive the downward acceleration.

The entire industry, both LECs and IXCs, will spend $23.97 billion next year, down $480 million from the $24.45 million it will spend this year. That represents a 2% decrease in spending in 1989, more than double the rate of the 1988 decrease.

Both the LEC and the IXC segments of the industry will reduce their expenditures by 2%. LEC spending will decline $380 million next year, from $19.82 billion in 1988 to $19.44 billion in 1989.

IXC spending will drop by $100 million, from $4.63 billion in 1988 to $4.53 billion in 1989.

However, RHC spending will decrease by only 1%. RHCs will spend $14.06 billion this year and $13.91 billion next year, a $150 million decrease.

The Top 18 Independents will record a much sharper drop. Top 18 Independent expenditures will drop about $200 million in 1989, from $4.90 billion in 1988 to $4.70 billion in 1989, a 4% reduction.

Other Independents also will reduce spending by 4%, from $864 million in 1988 to $828 million in 1989, a $36 million cut.

The industry is not in a sharp downturn. However, industry spending is downward bound. The segment pacing this downward spin in spending is the Independent industry, particularly the Top 18 Independents.

GTE, by the way, will again cut its expenditures in 1989, but more modestly. Its 1988 expenditures of $2.36 billion will be trimmed by $90 million to $2.27 billion, a 4% reduction next year compared to the 7% reduction it will make this year.

GTE and the other leading Independents along with the RHCs will continue to hold the key to spurring a renewed cycle of growth as the industry enters the 1990s. ☐

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INTERNATIONAL ISSUE

MONDAY, FEBRUARY 22, 1988

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INTEGRATING VOICE AND DATA COMMUNICATIONS

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International Review & Forecast Issue

NTT JOSTLES THROUGH A TOUGH PERIOD

In the midst of unprecedented change, internal and external pressures are being brought to bear. How is NTT coping?

EC TURNS UP PRESSURE

Liberalization reform mandate expected this week

FCC PLANS ITS OWN PRICE CAP PLAN

Patrick bows to congressional pressure

MONDAY, FEBRUARY 22, 1988 Volume 214, No. 8

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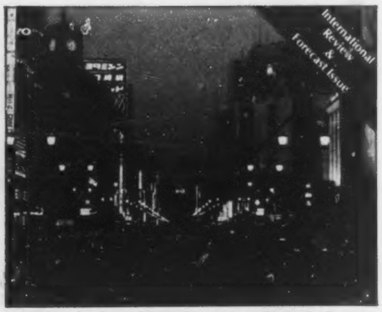
INTEGRATING VOICE AND DATA COMMUNICATIONS



NTT is in the midst of unprecedented change. Internal and external pressures are being brought to bear on one of the leading telecom companies. Cover photo courtesy of COMSTOCK Inc./Marvin Koner

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The European Commission is expected to mandate key reforms in a meeting this week

8 **FCC TO ISSUE ITS OWN PRICE CAP PLAN**
Bowing to congressional pressure, Patrick promises to submit a detailed proposal, effectively delaying price cap implementation

8 **STC BUYS NORTHERN TELECOM'S U.K. UNIT**
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Good news comes unexpectedly!

International telecom spending on the rise

The decade of the 1980s has been marked by negative or sluggish growth in international telecommunications spending. Unexpectedly, 1988 will see an increase in the real growth rate of the industry. Here's what is going to happen and a look at the larger forces shaping the industry's future

LARRY LANNON, Editor, and CZATDANA INAN, Marketing Development and Research Director

You never know what's going to happen next!

The gloomy '80s suddenly gleam with an unanticipated light. Absolute spending and the rate of real growth of international spending are both up.

The international telecommunications industry will sustain a healthy growth rate in 1988, *Telephony's* exclusive annual survey of international spending plans reveals.

Methodology

The information in this report is based on exclusive primary research conducted by *Telephony's* Market Research Department in December 1987 and January 1988.

Each of the PTTs was queried on its network expansion budgets for 1984-89 and the anticipated distribution of the 1988 budget over 14 major plant and facilities areas.

Any estimates that appear in this report have been cross-checked by *Telephony's* Market Research Department against past reports from the PTTs and their most recent annual reports.

The rapid decline in the value of the U.S. dollar is clearly having a systematic effect on reported 1987 and 1988 PTT budgets when converted into dollars. For countries whose currencies have appreciated markedly, such as Japan and West Germany, local currency increases of 1.7% and 8.9% respectively translate into dollar increases of 13% and 16.8% when comparing 1988 budgets to 1987 budgets. The same effect applies to most European countries.

A number of other countries tie their currencies more closely to the U.S. dollar, and the appreciation effect is absent. South Korea, for example, increased its local currency budget by 16.7%, but this was reflected only as a 20.4% increase in dollar terms. Similarly, Taiwan, with a 21.8% increase in budget in local currency terms showed an increase of 28.4% in dollar terms.

The survey tracks spending by leading PTTs and private telephone companies. Fifty countries, including all the leading countries in telecommunications, participated in this survey.

Growth

In 1988, the 50 participating countries plan to spend $93.4 billion, up $7.2 billion from the $86.2 billion they spent in 1987. Real growth in international telecommunications spending will increase from 6.3% last year to 8.35% this year. That is a 1.5% increase in the real growth rate.

Total spending, including estimates for those countries that declined to participate in our survey, will be about $109.1 billion in 1988. Last year, total international spending was $100.7 billion. Thus, total world spending will increase by $8.4 billion this year, a growth rate of 8.3%. Complete international spending information is shown in Table 1.

The 1.5% increase in real growth comes as a pleasant surprise. In 1986, real growth was pegged at 6.6%, so a 0.3% decrease was recorded in 1987. The recent past has been characterized by declines in the real growth rate.

In 1984, the rate of real growth in telecommunications spending plunged by 5.7%. It continued to drop in 1985, when it was down by 3%. In 1986, it increased by 1.2%. The slump in spending by national entities may well have reflected a worldwide shift in the balance of power from public to private networks. Large institutional users the world over have been able, and frequently have, built or leased private networks to obtain services. The PTTs, thus, could decrease their investment since demand was decreased.

This short-sighted strategy, of course, conceded the large customer to other vendors. Now the PTTs have almost unanimously recognized that large customers can and will take their lucrative business elsewhere unless they provide high-quality service over the public network. Fortunately, the necessary technology is increasingly available to provide quality business services over the public network at competitive prices. As the international telecommunications community's commitment to the integrated services digital network, or ISDN, matures and is manifested in the public network, the PTTs' ability to compete for large customers will increase—and so will their incentive to compete.

The good news contained in this survey suggests that competition on the international level for large customers will intensify steadily. As competition intensifies, the stakes will increase rapidly. Winners will be amply rewarded and losers will be devastated. The big players are laying their wagers right now for a game in which coming in second means coming in last.

The primary beneficiaries of this intense competition are sure to be the large users. They can

continued on page 38

Spending *continued*

play the private network vendors against the public network operators to ensure quality services at competitive prices.

To be sure, there are other factors at work. The health of the international economy is a big one.

The world economy has been on a roller-coaster ride recently. The international financial system suffered a massive coronary last autumn. Since then, restoratives have been applied and, so far, the stunned patient seems to be satisfactory, if a bit sluggish.

But no one is breathing freely yet.

In addition, tensions over trade and currency valuations that preceded last October's stock market

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TABLE 1 1987-1988 WORLD CONSTRUCTION EXPENDITURES ($000,000)

	IN CURRENT US$[a, b]	
	1987	1988
ZONE 1: NORTH AMERICA		
United States		
Regionals	14,063.6	14,057.8
Independents	5,941.4	5,762.2
Interexchange	4,544.2	4,631.8
Canada		
Bell Canada	1,486.1	1,670.3*
Other Telecom Canada	957.6*	1,076.3*
Bahamas	29.8	27.5
Bermuda	2.4	3.3
Dominican Republic	26.8	43.2*
Jamaica	27.3	31.4*
Trinidad & Tobago	33.3	44.4*
Subtotal	27,112.4	27,348.2
Extrapolated:		
Current US$	28,549.4	28,797.7
Constant (1984) US$	25,975.8	25,389.4
ZONE 2: AFRICA		
South Africa	965.0	738.4
Extrapolated:		
Current US$	2,011.8	1,648.6
Constant (1984) US$	1,830.4	1,453.5
ZONE 3-4: EUROPE		
Austria	913.6	1,048.1
Belgium	575.8	626.8
Cyprus	10.9	10.0
Denmark—Jydsk Tel	156.9	190.2
Finland—PTT	218.5	262.7
—Assoc	298.6	343.4
France	5,714.4	6,219.8
West Germany	8,712.1	10,175.5
Italy	3,837.0	4,331.1
Netherlands	695.5	769.7*
Norway	621.7	706.2*
Portugul	282.2	421.7
Spain	2,341.0	3,148.2*
Sweden	1,326.7	1,288.2
Switzerland	1,623.2	1,859.3
United Kingdom	3,322.0	3,547.4*
Subtotal	30,650.1	34,948.1
Extrapolated:		
Current US$	36,058.9	41,115.4
Constant (1984) US$	32,808.3	36,249.3
ZONE 5: SOUTH AND CENTRAL AMERICA		
Brazil	1,050.4	1,263.3
Chile	59.4	88.3
Costa Rica	23.1	21.4*
Colombia/Medellin	47.7	46.1*
El Salvador	15.3	73.0
Mexico	398.8	433.0*
Peru	70.2	33.3*
Uruguay	59.3	54.9*
Venezuela	191.2	90.3*
Subtotal	1,915.4	2,103.8
Extrapolated:		
Current US$	2,736.2	3,005.4
Constant (1984) US$	2,489.6	2,649.7
ZONE 6: PACIFIC		
Australia	1,108.8	1,090.0*
Indonesia/Permutel	485.1	484.8*
New Zealand	311.5	422.9*
Philippines	78.0	76.5*
Singapore	178.1	183.9*
Thailand	180.3	350.5
Subtotal	2,341.9	2,608.7
Extrapolated:		
Current US$	2,927.4	3,260.9
Constant (1984) US$	2,663.5	2,875.0
ZONE 7: USSR		
Current US$	6,974.1*	7,253.1*
Constant (1984) US$	6,345.4	6,599.3
ZONE 8: FAR EAST		
Hong Kong	107.3	194.0*
Japan	12,178.3	13,761.5*
Korea	1,525.8	1,836.8
Taiwan	702.7	902.5
Subtotal	14,514.1	16,694.8
Extrapolated:		
Current US$	18,142.7	20,868.6
Constant (1984) US$	16,507.2	18,398.7
ZONE 9: MIDDLE EAST		
Egypt	175.0	113.6*
India	598.8	608.8*
Israel	340.0	307.0
Kuwait	109.9	109.4*
Oman	93.6	93.6*
Syria	253.0	290.4*
United Arab Emirates	155.2	202.8*
Subtotal	1,725.6	1,725.7
Extrapolated:		
Current US$	3,263.9	3,196.6
Constant (1984) US$	2,969.7	2,818.3
GRAND TOTAL		
Identified Countries	86,198.6	93,420.9
Extrapolated:		
Current US$	100,654.4	109,146.2
Constant (1984) US$	91,589.8	96,433.1

Source: Telephony, a division of Intertec Publishing Corp.

Telephony estimate

[a] 1987 at average annual exchange rates of International Monetary Fund and U.S. Federal Reserve System

1988 at mid-January 1988 exchange rate of Federal Reserve System.

[b] assumes 3.1% average inflation during 1984-1988 (U.S. GNP Deflator)

scare have yet to be resolved. Until they are, the world economic picture will remain dicey.

Politically, the world has rarely seen more regional trouble than it does now. The Middle East, Africa and Latin America in particular suffer from agonizing political and social disputes. The trouble in the Middle East is the focus of considerable concern, given the pre-eminent role Middle Eastern oil plays in the world's economy. But Latin America's turmoil guarantees that political strife will continue to hamper the region's efforts to resolve its backbreaking economic problems.

Africa, troubled for many years, remains a desperately poor continent laden with people, natural resources, and multifaceted political and social conflict. Africa continues to be the least developed continent in terms of telecommunications services. No end to the continent's troubles is in sight. Until progress is made on its many fundamental problems, it is difficult to see how Africa's telecommunications infrastructure can be given much attention.

The slump in spending by national entities may well have reflected a worldwide shift in the balance of power from public to private networks. Large institutional users . . . have . . . built or leased private networks to obtain services.

But if regional troubles vex the world as never before, there are several bright lights in the international political firmament.

Relations between the Soviet Union and the United States today are more harmonious than they have been during this decade. Relations between China and the U.S.S.R. have improved steadily for several years. And the detente between the U.S. and China continues to guide the policy of each.

Superpower tensions, though far from resolved, are down. The prognosis is hopeful.

Leaving the prickly question of trade aside for a moment, political relations among the Western powers, including Japan, are solid. The Eastern Bloc is undergoing a mild thaw as a consequence of glasnost in the U.S.S.R. And political relations between Eastern and Western Europe continue to improve gradually.

In short, the world is struggling with numerous painful political troubles that hamper economic development in all sectors, including telecommunications. But right now, the most difficult problems are confined to regional levels. On the global political level, the moment is auspicious.

The balance is fragile. For instance, if any of the several political conflicts in the Middle East were to directly involve two or more superpowers, as could have happened last autumn in the Persian Gulf, the world's political climate would take a nasty turn for the worse overnight.

Likewise, economic tensions could profoundly affect the political equation. For instance, if the trade tensions among Western Europe, the U.S. and Japan were to worsen, they could well be expressed politically, weakening the Western powers.

But for the moment at least guarded optimism is justified.

The increase in telecommunications spending worldwide may well be an effect of this guarded optimism. It also can be looked upon as a potential cause of greater international harmony in the future.

International spending surveys, by their nature, lump nations together. Unfortunately, this tends to create the illusion that supranational forces not only shape national decisions but supersede decision-making on the national level.

Nothing could be further from the truth.

The important telecommunications investment decisions are made by national and, as is the case in the U.S., sub-national authorities. Together, those decisions define the international industry. The reverse does not hold.

Table 2 examines the spending levels of the Top 20 countries. Analysis of the Top 20 also reveals in stark relief the geography of telecommunications development at the present moment.

Eleven of the Top 20 countries

TABLE 2 TOP 20 COUNTRIES (1988 US $ EXPENDITURES)

Country	1988 Expenditures (US $000,000)	1987 Expenditures (US $000,000)	Increase (Decrease)	(%)
United States	24,451.8	24,549.2	(97.4)	(0.4)
Japan	13,761.5	12,178.3	1,583.1	13.0
West Germany	10,175.5	8,712.1	1,463.4	16.8
France	6,219.8	5,714.4	505.4	8.8
Italy	4,331.1	3,837.0	494.1	12.9
United Kingdom	3,547.4	3,322.0	225.4	6.8
Spain	3,148.2	2,341.0	807.2	34.5
Canada	2,746.6	2,443.6	303.0	12.4
Switzerland	1,859.3	1,623.2	236.1	14.5
Korea	1,836.8	1,525.8	311.0	20.4
Sweden	1,288.2	1,326.7	(38.6)	(2.9)
Brazil	1,263.3	1,050.4	212.9	20.3
Australia	1,090.0	1,108.8	(18.8)	(1.7)
Austria	1,048.1	913.6	134.5	14.7
Taiwan	902.5	702.7	199.8	28.4
Netherlands	769.7	695.5	74.1	10.7
South Africa	738.4	965.0	(226.6)	(23.5)
Norway	706.2	621.7	84.5	13.6
Belgium	626.8	575.8	51.0	8.9
India	608.8	598.8	10.0	1.7

are in Western Europe. No Eastern European country is in the Top 20. Three European countries—Italy, France and West Germany—are in the Top 5. Six—the three already cited plus the U.K., Spain and Switzerland—are in the Top 10.

Four of the Top 20 countries are in Asia: Japan, South Korea, Taiwan and India. South Korea has become the 10th largest country in the telecom world, by the way.

The two North American giants—the U.S. and Canada—are in the Top 10. Australia ranks 13th on the scale.

South Africa is the only country from Africa in the Top 20, ranking 17th.

Brazil, the troubled but gifted giant of South America, is the only country from Latin America in the Top 20. It ranks 12th.

Growth

It is interesting to examine how the rankings change when growth, not size, is used to rank countries.

The U.S., the largest country in terms of telecommunications expenditures by a wide margin—nearly double its closest competitor, Japan—disappears entirely from the Top 10 growth budgets, as Table 3 shows. Japan, on the other hand, ranks first using the growth scale.

European countries dominate the growth scale, too. Six of the Top 10 are Western European countries.

Spain is the real comer in the group. After years of relative lethargy, Spain is making a major commitment to telecommunications development.

Brazil is another interesting member of the Top 10 growth budgets, ranking 10th. Despite its gigantic economic woes, Brazil continues to make telecommunications development a national priority.

The Top 5 budget cutters, shown in Table 4, are animated by different motives and work under vastly different conditions.

Egypt, the top budget cutter, is a poor, crowded country with many development priorities besides telecommunications. In addition, Egypt is in a heavily militarized part of the world and is beset by substantial internal instability.

South Africa, though in some respects a wealthy country, is wracked by profound civil strife internally and troubled by extremely poor relations with the neighboring countries of Africa and most of the world. It is no surprise that South Africa ranks second among the leading trimmers.

Australia and Sweden are fifth and fourth on the trimmer scale, respectively. Both are peaceful nations. Both have excellent and mature telecommunications systems. Both have long been technological leaders. Their decisions to cut their telecom budgets this year, thus, derive from completely different circumstances and aspirations than inspire South Africa and Egypt.

Israel, ranked third on the trimmer scale, also enjoys a reputation for technological excellence and for providing quality social services. But Israel must fight. It is fighting against serious and seemingly intractable economic problems and against fundamental social problems that are now the focus of the world's attention. These struggles fuel political disputes within the government.

Underlying these three struggles is Israel's commitment to maintain a strong, efficient military sector. The importance to Israel of maintaining its military strength may or may not contribute to its social and political conflicts, but it certainly exacerbates its economic troubles.

As three of the Top 5 budget cutters illustrate, telecommunications development is an important subset, but only a subset, of economic development. Non-economic factors frequently influence economic decision-making and, consequently, telecommunications investments.

Telecommunications knits the world together. But it is only an expression of contemporary social expertise and needs.

Even a cursory review of 1988 international telecommunications spending plans demonstrates how intimately intertwined the telecommunications industry is with the most profound forces shaping distinct national experiences.

Telecommunications ties the world's islands together, which means it is not an island unto itself. □

TABLE 3 TOP 10 GROWTH BUDGETS 1987-1988 (MORE THAN US $100 MILLION PER YEAR)

Country	1988 Expenditures (US $000,000)	1987 Expenditures (US $000,000)	Increase (Decrease)	(%)
Japan	13,761.5	12,178.3	1,583.1	13.0
West Germany	10,175.5	8,712.1	1,463.4	16.8
Spain	3,148.2	2,341.0	807.2	34.5
France	6,219.8	5,714.4	505.4	8.8
Italy	4,331.1	3,837.0	494.1	12.9
Korea	1,836.8	1,525.8	311.0	20.4
Canada	2,746.6	2,443.6	303.0	12.4
Switzerland	1,859.3	1,623.2	236.1	14.5
United Kingdom	3,547.4	3,322.0	225.4	6.8
Brazil	1,263.3	1,050.4	212.9	20.3

TABLE 4 TOP 5 BUDGET CUTTERS 1987-1988 (MORE THAN US $100 MILLION PER YEAR)

Country	1988 Expenditures (US $000,000)	1987 Expenditures (US $000,000)	Increase (Decrease)	(%)
Egypt	113.6	175.0	(61.4)	(35.1)
South Africa	738.4	965.0	(226.6)	(23.5)
Israel	307.0	340.0	(33.0)	(9.7)
Sweden	1,288.2	1,326.7	(38.6)	(2.9)
Australia	1,090.0	1,108.8	(18.8)	(1.7)

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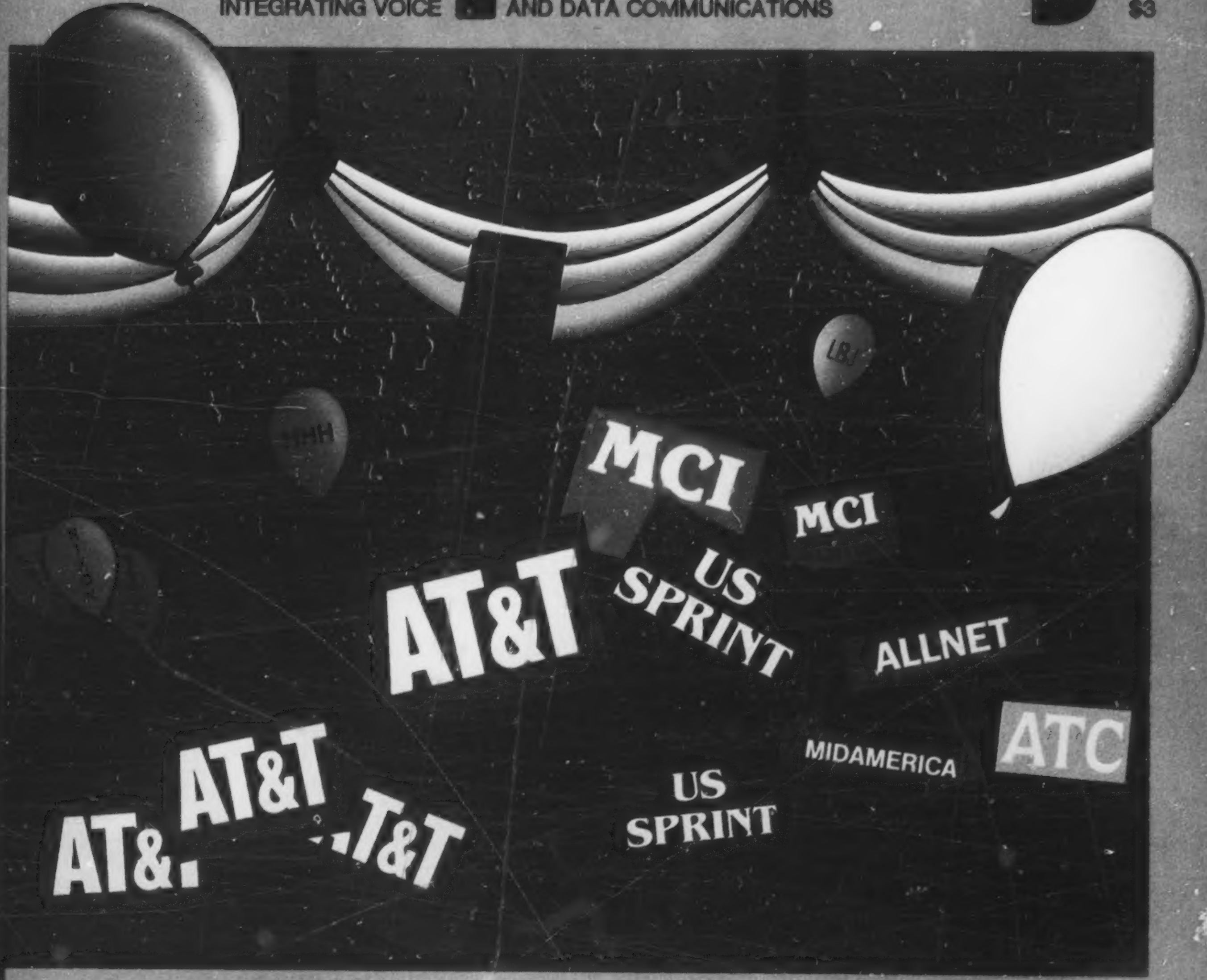
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The top three IXCs have lofty goals for a winning ticket

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The undisputed top three IXCs—AT&T, MCI and US Sprint—have entered the 1988 election year campaigning for market share. Cover art by AGS&R

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LEC earnings reflect surprising range of results

A look at earnings by the RHCs and top three Independents for the first and fourth quarters of 1987 shows the majority are continually building their economic base

SUSAN UBIS, Staff Editor

The earnings results are in and the figures have been tallied. The general picture is that 1987 was a lopsided year for local exchange carriers.

Table 1 tells the numbers story. Of the Bell regional holding companies, Pacific Telesis was the big loser, showing a 48.8% drop in earnings for the fourth quarter, compared with the first quarter. Bell Atlantic and BellSouth posted drops in earnings between the first and fourth quarters, of 7.3% and 9%, respectively (Table 2).

TABLE 1 EARNINGS COMPARED— 1ST QUARTER AND 4TH QUARTER 1987

	net income ($000,000)	revenues ($000,000)	earnings per share
Ameritech			
4th quarter	322.2	2447	$2.33
1st quarter	289	2300	2.03
Bell Atlantic			
4th quarter	285	2603	1.44
1st quarter	307.5	2465	1.54
BellSouth			
4th quarter	411.5	3167	.85
1st quarter	452.4	2950	.94
Contel			
4th quarter	(93.8)	807	(1.21)
1st quarter	54.7	723	.71
GTE			
4th quarter	334	4074	.99
1st quarter	265	3693	.78
Nynex			
4th quarter	322.5	3103	1.59
1st quarter	299.2	2891	1.47
Pacific Telesis			
4th quarter	150	2415	.35
1st quarter	293.3	2244	.55
Southwestern Bell			
4th quarter	246.5	2152	.82
1st quarter	237.7	1876	2.37
United Telecommunications			
4th quarter	29.1	792	.29
1st quarter	13.5	720	.13
U S West			
4th quarter	255	2163	1.35
1st quarter	204.2	2040	1.08

On the up-side, U S West was the biggest gainer, showing an increase in net income of 24.9% between the first and fourth quarters. Ameritech, Nynex and Southwestern Bell also rallied for a better fourth quarter showing.

The three major Independents also showed mixed results. GTE and United Telecommunications showed improvements, attributed to efficiencies in their joint US Sprint long-distance unit. But Contel recorded a 271.5% deficit between the first and fourth quarters, taking substantial writeoffs for its Contel ASC unit and other assets.

Beneath the Surface

The numbers don't tell the whole story. Between writeoffs, restated figures and stock splits, there is much left between the lines of those financial statements.

Ameritech's gains can be attributed to the performance of its Enterprise Group, which accounted for more than half of Ameritech's net income for 1987. Fourth quarter results were also affected by lower state and federal income taxes.

Bell Atlantic showed increases in revenues, but also posted sizable increases in expenses, including employee benefits, depreciation and amortization. Still, earnings for both the first and fourth

TABLE 2 EARNINGS CHANGE— 1ST QUARTER TO 4TH QUARTER 1987

	dollars ($000,000)	percentage change
Ameritech	33.2	+ 11.5
Bell Atlantic	(22.5)	− 7.3
BellSouth	(40.9)	− 9
Contel	(148.5)	−271.5
GTE	69	+ 26
Nynex	23.3	+ 7.8
Pacific Telesis	(143.3)	− 48.8
Southwestern Bell	8.8	+ 3.7
United Telecommunications	15.6	+115.5
U S West	50.8	+ 24.9

quarters of 1987 were higher than similar periods in 1986.

BellSouth had a very strong year, despite its drop in earnings between the first and fourth quarters. The company posted its best-ever gain in access lines, adding 656,000 access lines for the year. While revenues increased, those figures were offset somewhat by increased depreciation expenses. Still, earnings figures improved in both periods compared to the same periods for 1986.

Contel shifted several operations in the fourth quarter, resulting in its $93.8 million net loss. Among the changes were the sale of its Texocom telephone supply business to Alltel Supply Co. That transaction alone brought a write-off of $11 million for the fourth quarter.

Contel's Telephone Operations Sector posted its strongest annual financial results in the company's history. The increases were due in part to revenues from the recently deregulated inside wiring maintenance fees, and billing and collection services for interexchange carriers.

Contel Cellular also improved throughout the year, doubling its customer base and expanding into six new markets. Despite the strong showing, Contel decided to put a hold on a stock offering after the stock market tumble last October.

The Information Systems Sector posted a $127 million loss, due to the company's decision to revamp Contel ASC. In addition, Contel agreed to sell its Executone division to Vodavi Technology Corp.

GTE's fourth quarter gains can be attributed to three actions. Among those are gains realized on pension settlements and the sale of real estate holdings.

Also, US Sprint, which GTE owns jointly with United Telecom, posted its best quarter ever, with each company losing only $58 million, compared to $121 million in the first quarter. Sprint's improvements are due to its conversion to a fiber optic network, which reduced the company's costs for its microwave network and for leasing capacity on other networks. A crackdown on fraudulent users of the network also left a positive mark.

GTE's three main units—Telephone Operations, Electrical Products and Communications Products—also posted higher revenues in the fourth quarter, compared to the first quarter. But Telephone Operations had lower income in the fourth quarter. The decrease reflects the company's effort to offset increased capital recovery and other costs by lower income tax rates and pension costs.

Electrical Products had a much better fourth quarter because of higher shipments of lighting products and precision materials, as well as favorable foreign exchange rates. The increase also reflects higher sales and lower pension costs.

Nynex had a good year. Increases in customer lines and digital lines contributed to higher earnings, as well as network upgrades. First quarter earnings were offset somewhat by costs for staffing and training, as well as costs associated with the establishment of a research and development organization.

Three factors contributed to Pacific Telesis' decrease in earnings for the fourth quarter. The company implemented an early retirement program, which increased expenses for the quarter by $217 million. PacTel Communications was restructured, which included closing some PacTel Info Systems stores.

The company also felt the effects of a California Public Utilities Commission rate case reversal, and restated earlier earnings per share values because of it. First quarter earnings, restated to reflect a two-for-one stock split, were restated again to reflect the rate refund, to 55¢.

Economic conditions in Southwestern Bell's territory have adversely affected company performance in the last few years. Although access line growth was flat, the company reaped greater returns as 1987 progressed. A three-for-one stock split in May altered the earnings per share picture. Fourth quarter earnings were affected by Southwestern Bell's purchase of Metromedia Paging Services.

US Sprint's performance brightened United Telecom's earnings picture. Improvement in the telephone operations' performance also played a part. Revenues in that unit increased 6% for the year, while income rose 4%. The number of access lines grew 4.2% for the year.

U S West's first quarter results were reduced by $23.6 million by a career incentive plan, which cut 1400 managers. The costs related to a ruling by the Oregon Public Utility Commission to refund $6.6 million were tacked on to first quarter earnings also.

U S West's non-regulated subsidiaries showed a profit for the first time in 1987, enhancing the fourth quarter results.

All the companies expect efficiencies and improvements made in 1987, whether depreciation expenses, retirement programs, acquisitions or mergers, will improve their bottom lines in 1988. With first quarter earnings due in the next month, the proof will be in the pudding. ■

Interexchange carriers campaign for market share in '88

MCI
MCI
AT&T
US SPRINT
ALLNET
ATC
MIDAMERICA
AT&T
T&.
T&T
US SPRINT

ELLIS BOOKER, Features Editor, and CZATDANA INAN, Marketing Development and Research Director

Last March, *Telephony's* survey of the interexchange marketplace revealed a continuing battle for survival among those IXCs below market leaders AT&T Communications, MCI Communications Corp. and US Sprint Communications Co. Although these "second tier" companies occupied just 6.1% of the total $28.1 billion 1987 interexchange business, some of the most dramatic events in the industry occurred in this segment.

Meanwhile, the undisputed top three IXCs—AT&T, MCI and US Sprint—have entered the 1988 election year with goals not unlike those of the presidential hopefuls: Avoid embarrassing mistakes and offer a consistent, public image through advertising. (For a closer look at how AT&T, MCI and US Sprint conduct their advertising, see story on page 30.)

The charts on the following pages are the product of *Telephony's* Market Research Department.

Methodology

This report is based on exclusive primary research conducted by *Telephony's* Market Research Department between January and February this year.

Each of the interexchange carriers was queried on its customer base, sales, the composition of its sales force and number of employees. In addition, the companies were asked to report all acquisitions made during the past two years.

Any estimates that appear in this report have been cross-checked by *Telephony's* Market Research Department against filings by the IXCs with the Federal Communications Commission, the Securities and Exchange Commission and the *Telephony* Market Research Department database and are believed to be accurate within ± 5% of the estimated amounts.

Dominant Three

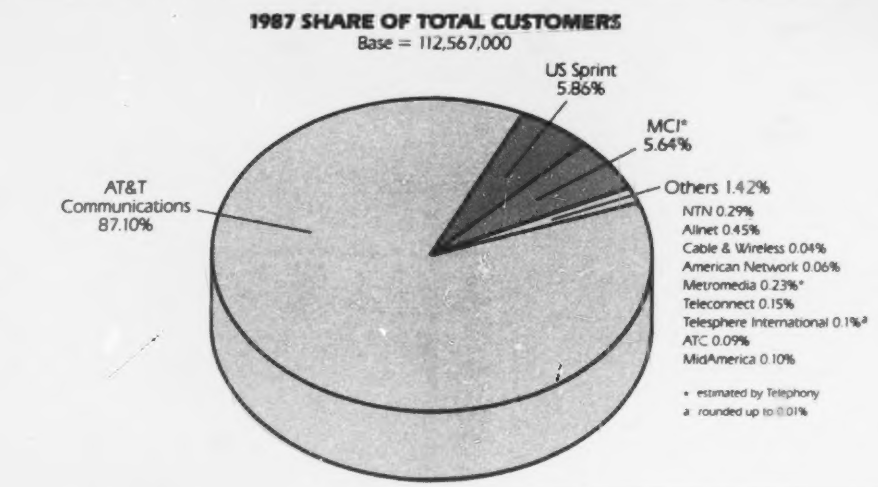
As expected, AT&T, MCI and US Sprint own the lion's share of the industry, both in terms of revenues and total customers (see accompanying tables). Of total industry revenues, AT&T had 69.9% of the market, MCI 14% and Sprint 10%.

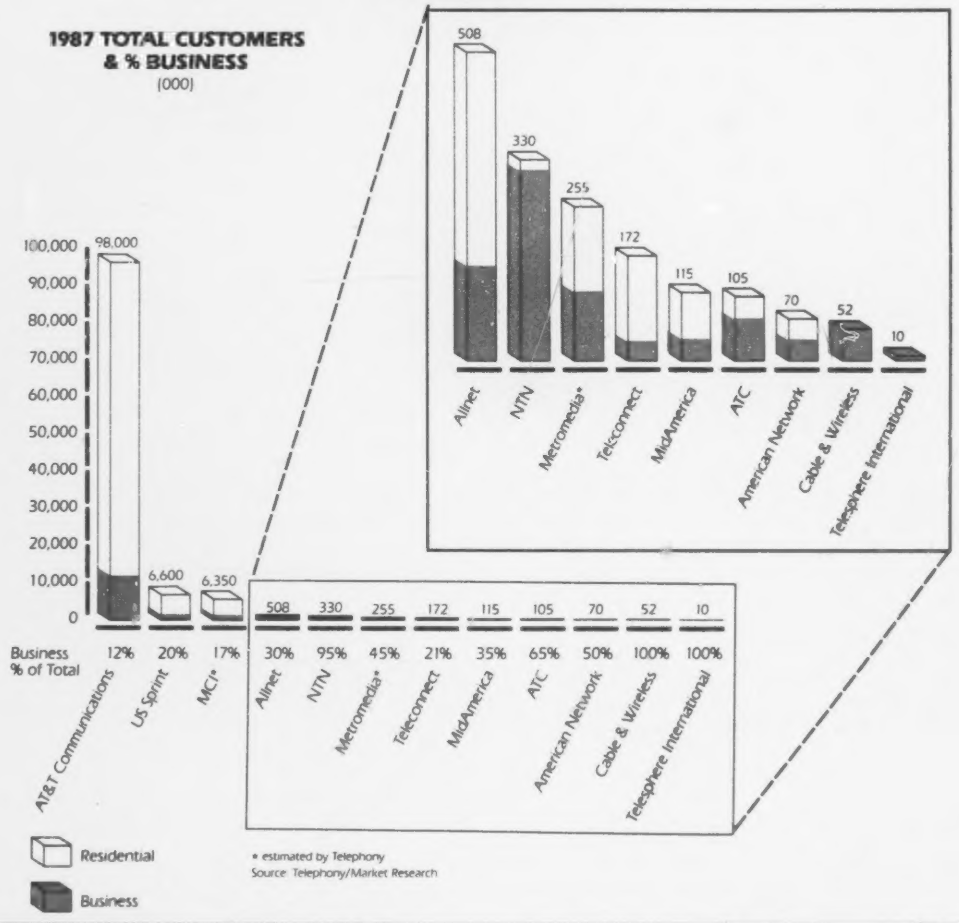
Actual net revenues for the industry moved from $26.04 billion to $28.13 billion between 1986 and 1987, or an 8% increase. Of this, AT&T topped the scales at $19.66 billion, a 2.9% change over 1986, and MCI came in second with $3.94 billion, a 9.7% change over 1986.

But the big revenue story in the '86-'87 period was Sprint's performance. This IXC, the result of a 1986 merger between the faltering long-distance operations of GTE Corp. and United Telecomunications, had net revenues of $2.8 billion in 1987, a massive 45.8% gain over its 1986 showing of $1.9 billion.

Even so, Sprint and MCI were neck-and-neck in customer growth for the period, each showing a 27% gain compared to AT&T's 2% increase. Interestingly, the business-to-residential ratio held rock steady at all three companies.

Below the top three IXCs, Allnet Communication Services Inc. held 0.45% of the IXC industry by total customers in 1987. Allnet was followed by the National Telecommunications Network, or NTN, with 0.29%. But NTN, a partnership of five regional IXCs, actually outperformed Allnet in terms of reve-





* estimated by Telephony
Source: Telephony/Market Research

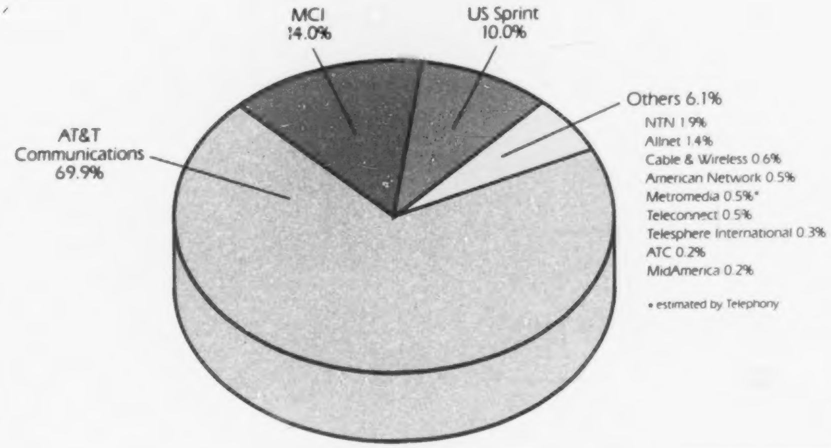
nues and customer growth, posting $550 million in 1987 to Allnet's $395 million, and increasing its customer base by 65%.

In fact, NTN's revenue gain in 1986-87 was a whopping 83.3%, making it far and away the industry leader on this measure among the top 11 IXCs. In comparison, Allnet's revenues fell 12.2% during the period, a change the company attributes to its rate cuts in response to AT&T's rate cuts. This difference may reflect the business-to-residential ratio at each company: Thirty percent of Allnet's customers are business compared to 95% at NTN.

But consolidation and merger, not financial performance, were the watch words for the second tier companies. NTN, for instance, began 1987 with seven companies in its consortium, but ended the year with five. First, Williams Telecommunications Co. and LDX Net Inc. agreed to merge *(Telephony, June 22, 1987, page 12)*. In August, on the heels of that consol-

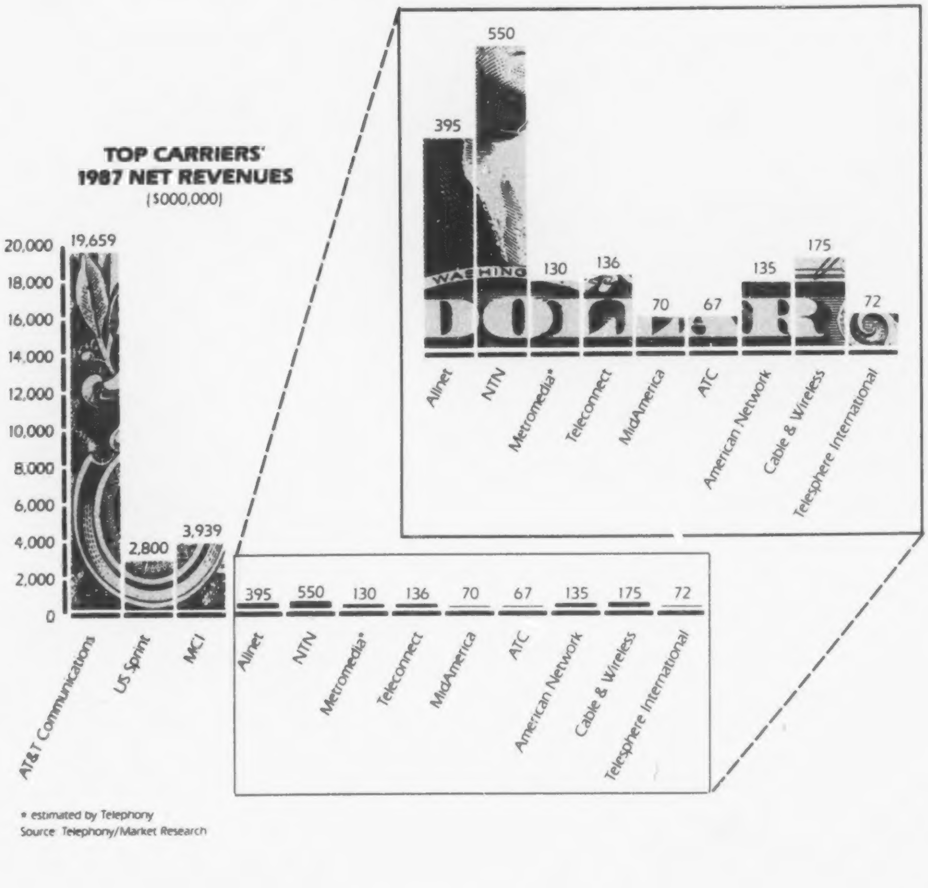
continued on page 27

1987 SHARE OF REVENUES
Base = $28.1 Billion



* estimated by Telephony

TOP CARRIERS' 1987 NET REVENUES
($000,000)



* estimated by Telephony
Source: Telephony/Market Research

idation, Southland Communications Corp. agreed to become part of NTN member SouthernNet Inc.

"I think five is a good number for the short-term . . . for '88," says NTN Vice President and General Manager Martin F. McDermott, who at last seems comfortable with the idea that future consolidation within the NTN group is a possibility. McDermott insists, however, that these changes will probably involve geographically contiguous NTN companies, not outsiders.

But stemming the tide of second tier consolidations or dictating their nature may prove difficult. Late last month, NTN member Microtel Inc. announced an agreement, in principle, to become a subsidiary of Advanced Telecommunications Corp. (see sidebar).

Regional Viability

Interestingly, despite abundant evidence that the shakeout among second-tier IXCs will continue, executives from these companies continue to argue the viability of a "regionalized" approach.

Charles H. Helein, general counsel for the Alternative Carrier Telecommunications Association, admits that making a small IXC work is a matter of marketing, location, management and, most important of all, customer service.

"We have to compete on customer service and *innovative customer service*," says Helein, whose three-year-old association has about 50 small, second-tier IXC members.

Helein tells of one of the association's members who enjoys profits "despite lost margins" simply because of manic attentiveness to his customer's bills.

"If he sees an unusual traffic increase, he gets in touch with the customer right away," reports Helein. (Indeed, asked about the key business concern for his members, Helein answers, without hesitation, "fraud." The association currently is investigating possibilities for "fraud insurance" for its members.) But ancillary services beyond billing, such as 800 numbers, operator assistance and international service, present a thorny problem for small IXCs, according to Helein.

"Take operator service. It's both an opportunity and a threat. If other [IXCs] offer it, you may potentially lose business to them." The question, he continues, is whether the margin exists to justify the expense of offering these services. He concludes that some companies may be pressed to offer such services in order to appear competitive, even if the services themselves contribute very little revenue.

Regulatory Outlook

Unquestionably, the most significant regulatory event in the IXC industry this year will be the resolution of the Federal Communications Commission's proposal to replace AT&T's rate-of-return regulation with some form of price-cap regulation.

However, the impact that this will have on the industry (and AT&T's earnings potential) depends on the specific provisions of the price-cap plan, according to Audrey Stevoff, vice president, Duff and Phelps Inc.

"There's been talk about an up-front price cut . . . an agreed upon price cut," says Stevoff, whose sources inside the FCC say the commission will issue its order on the matter in April.

A second key issue, she says, is whether AT&T will be allowed to keep earnings above some agreed upon "productivity factor" or whether it will be told to pass these profits on to its customers in the form of rate reductions. Depending on its formula, a price cap could have a dramatic impact on MCI and US Sprint, Stevoff says.

Given the consolidations in the industry to date, and the prospect of more mergers and acquisitions to come, is there still a place for the "regional" IXCs?

Like some other second-tier IXC executives, NTN's McDermott praises the regional approach, which he says allows each NTN member company to "keep its arms" around the business. "It's like the interconnects in the old days. It's hard to be in the middle. You can be a very large company or very small," he comments.

This view is shared by analyst Stevoff. "There's still a place for small companies. Texas once had 200 [alternative carriers]," she notes, adding that in locations not served by MCI or Sprint, a smaller IXC could offer customers service and price for toll calling that could be more attractive than AT&T's offerings. ■

Latest two mergers

As if to underscore the ongoing consolidation among interexchange carriers below the dominant top three companies, four IXCs entered into agreements during the week *Telephony's* survey story was being prepared.

On Feb. 26, MicroTel, a fiber carrier in Florida, agreed to become a subsidiary of Atlanta-based Advanced Telecommunications Corp. Under the deal, MicroTel shareholders would exchange common shares of stock for ATC shares.

MicroTel is one of five companies in the National Telecommunications Network partnership, a group of regional, fiber-based IXCs, and is 45% owned by Alltel Corp., the nation's fourth largest IXC concern.

In a second merger story, Vancouver, Wash.-based American Network Inc. agreed Feb. 25 to be purchased by United States Transmission Systems Inc., the long-distance subsidiary of ITT Corp., for approximately $2.2 million. With 70,000 customers, American Network posted 1987 revenues of $135 million.

ITT's original bid to take American Network was called off late last year *(Telephony, Dec. 14, 1987, page 26).* American Network had been the target of a lawsuit by its investors. Although ITT had made dismissal resolution of the litigation a condition of the sale, it waived this condition in its recent bid.

Speaking to *Telephony* a few days after the second ITT deal was announced, John Beeby, director of marketing at American Network, said he expected the IXC industry would consolidate to "four or five players."

An ITT spokesman confirmed that, if the acquisition meets with shareholder and regulatory approval, American Network will be fully folded into United States Transmission Systems.

4/7/88

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MONDAY, APRIL 4, 1988

Telephony

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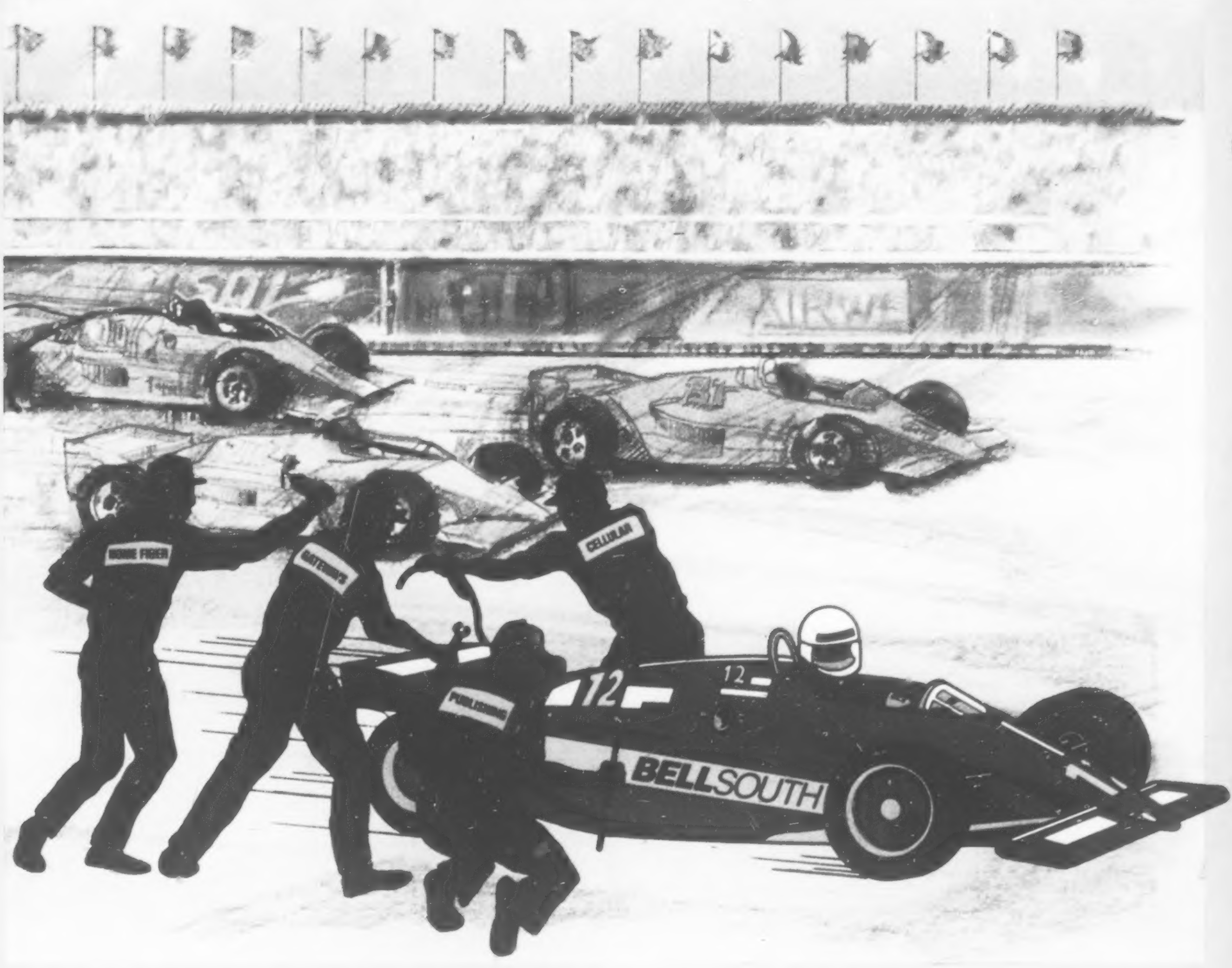

BELLSOUTH REVS INTO HIGH GEAR

This RHC hopes to outrace its competitors in the enhanced services market

SUPERCOMM '88 DRAWS NEAR

Special preview coverage of the telecom event of the year begins inside

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Telephony

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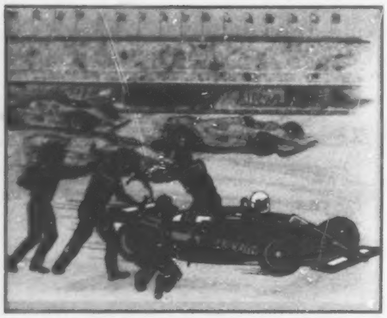

The largest RHC by revenues, the darling of the investment community and the company some say is best positioned to offer enhanced services over its public network, BellSouth Corp. hopes to outrace its competitors.
Cover art by AGS&R

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Vendors and users got their first look at the crucial issue of ISDN pricing when Illinois Bell announced its service costs for downtown Chicago and suburban Oak Brook

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MCI wins a legal struggle to force the FCC to compare what AT&T pays the RHCs under different arrangements with what MCI and other competitors pay

13 BT CONTRACT CROWNS GPT LAUNCH
The newly merged GEC and Plessey telecommunications operations win a major switch order from its No. 1 customer

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By Michael Warr. The 35th annual ISSCC attracted a horde of technicians to discuss and debate trends in integrated circuit technology, including future applications of ISDN

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one or two aggregate links at either T-1 or CEPT rates.

Pirelli Communication Systems added two units to its 3000 Series of IBM-compatible multiplexers. Each supports up to 128 IBM type A compatible devices over a single FO cable. The FC-3128 supports 128 independent coax channels and up to four IBM 3274 controllers, each with 32 ports. The FC-3144 interfaces directly with the four multiplexed ports on each 3174 controller.

Advanced Compression Technology Inc., a new company formed to design and market low bit rate voice networking products, rolled out a speech data multiplexer. The SDM-1 allows one voice channel and one data channel to be combined over the same tie line or analog leased line. It uses a proprietary voice compression algorithm to provide communications grade voice quality at 9.6 kb/s, enabling transmission of this compressed speech with data over a high-speed modem.

Integrated Telecom maximizes network

Larry Lannon, Editor

Four years ago, when AT&T first tariffed T-1 capacity, some telecommunications entrepreneurs saw the immediate opportunity to sell multiplexers, to harness that capacity for large business users.

Richard Young saw something else.

He read the fine print of the AT&T tariff and realized that if a company was willing to adhere to AT&T's standards, it was possible to allow the network to do some of the necessary de-multiplexing of voice and data traffic.

As a result, the company Young helped found, Integrated Telecom, did not sell a traditional T-1 multiplexer. Instead it developed the Accudacs system, which combines channel bank and digital access and cross-connect technology. Accudacs offers voice and data multiplexing, voice compression, X.25 packet switching and more.

Most importantly, says Young, it enables a customer with multiple business sites to establish a T-1 network without buying a multiplexer for each location. "We focus on network efficiency, not bandwidth efficiency," he says. He views Integrated Telecom as a partner to, not a competitor with, the carrier industry, since the company's products permit users to capitalize on the intelligence inherent in the public network.

At Interface '88, Integrated Telecom was focusing on a new network management package for its Accudacs processors—a system with interfaces to the two current developing systems, IBM's NetView PC and AT&T's Unified Network Management Architecture. The system operates on an IBM PS/2 or AT PC and uses X.25 packet technology as its control channel medium. It provides a networkwide view of the customer's T-1 facility, providing point-to-point route definition, hardware configuration and centralized event reporting.

Integrated Telecom is also focusing its attention overseas, however, where its leadership sees good business opportunities. A key to making his ideas work, Young says, is providing a means to carry T-1 traffic among different carriers, and not just in the U.S.

Richard Young

"The international market is going to be lucrative because there are multinational companies that want a unified network," Young said during a recent early morning meeting at Integrated Telecom. "We give them a means to get across the pond and tie into the domestic network."

Young indicates Integrated Telecom is doing business with several countries overseas. But Mexico is the only country he would identify.

Young's company functions as an OEM, or original equipment manufacturer, for data equipment companies and sells to channel bank manufacturers. It also sells to carriers. It has a foothold in the automatic call distributor market. And Young indicates it sees the PBX market as another major opportunity he hopes to develop.

But the carriers will remain a crucial element in Integrated Telecom's mix.

"Carrier compatibility" is "the real wave of the future" in T-1, Young says. Integrated Telecom is "in total synergy with what the carriers are doing.

"Instead of taking the phone companies on," Young adds, "I want to work with them."

Correction

Our recent interexchange carrier feature reported net revenues rather than gross revenues for AT&T Communications *(Telephony, March 14, page 22)*.

AT&T-C had gross revenues of $36.4 billion in 1986, based on $16.8 billion in net revenues plus $19.6 billion in access charges paid to telephone operating companies. The company's 1987 gross revenues fell 3.5%, to $35.1 billion, while net revenue rose 4.1%, to $17.5 billion, and access charges fell 10.2%, to $17.6 billion.

Based on the revision, and inclusion of ITT/USTS, total gross revenues for all of the carriers reported in the feature fell 0.2%, from $43.9 billion in 1986 to $43.8 billion in 1987.

Among the top three carriers, market share of gross revenue for AT&T-C fell from 83.1% in 1986 to 80.3% in 1987. MCI's share of gross revenues rose from 8.2% to 9% over the period. US Sprint, including the Telenet subsidiary, increased its market share to 5.9% in 1987 from 4.9% in the previous year. Combined share of total revenues for the top three, however, fell from 96.2% in 1986 to 95.2% in 1987.

Market share of gross revenues for the three carriers in the second tier climbed from 2.3% of 1986 gross revenues to 2.9% in 1987. Allnet's share shifted only slightly, from 1% in 1986 to 0.9% in 1987, while NTN almost doubled its share, climbing from 0.7% to 1.2% over the period. ITT/USTS, excluding its planned acquisition of American Network, had an estimated 0.6% share of 1986 total gross revenues and 0.8% in 1987.

The combined share of total revenues for the other seven carriers reported in our March 14 story rose from 1.5% in 1986 to 1.9% in 1987.—*Marketing Development and Research Director Czatdana Inan.*

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AN INTERTEC PUBLICATION

MONDAY, APRIL 11, 1988

Telephony

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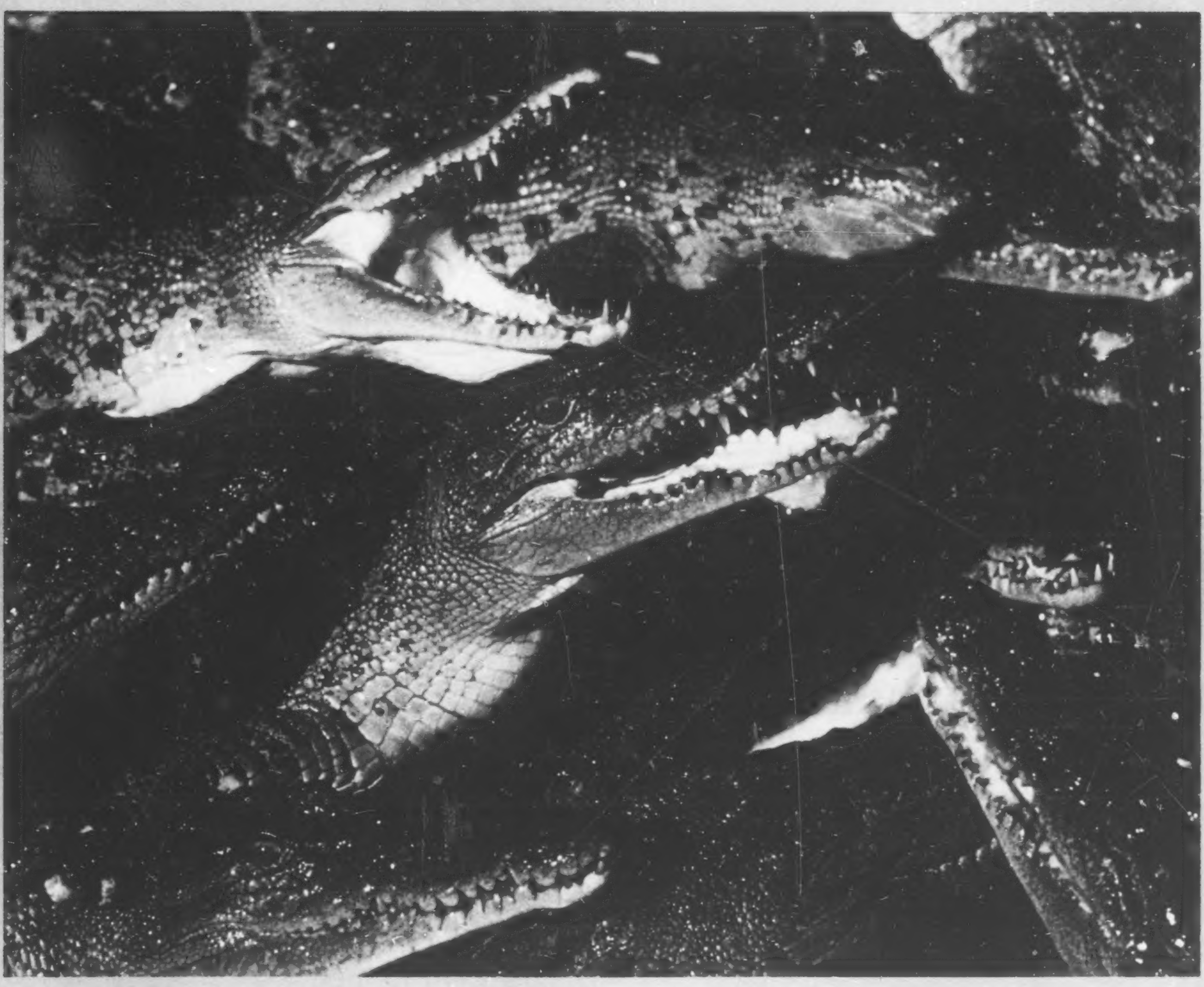

FEEDING FRENZY GRIPS CPE MARKET

Many suppliers are feeling the heat of competition on their tails

AT&T FIRES FIRST ISDN SALVOS

First services may not sway skeptics

BELL ATLANTIC FILES MESSAGING PLAN

Company plans to test pay phone voice message service

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MONDAY, APRIL 11, 1988 Volume 214, No. 15

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

The competitive CPE market has been thrown into a feeding frenzy by increasingly sophisticated technology and customers. Cover photo by M. Funk, The Image Bank

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Industry analysts are generally underwhelmed by two network services based on ISDN primary rate interface

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The RHC files for FCC approval to launch three trials this summer of technology to offer recorded voice messaging on its public phones

13 DSC, DEC JOIN FORCES
The latest alliance between communications and computer manufacturers will produce an interface for DSC's MegaHub and DEC's VAX systems

13 SW BELL UNVEILS VOICE MAIL PLAN
The RHC files comparably efficient interconnection plan with the FCC to offer voice messaging service

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By Susan Ubis and Czatdana Inan. As technology becomes more advanced and customers more picky, some CPE providers could lose their alligator shoes

36 SUMMIT COUNTY SAVES WITH NEW LPABX
By Robert Snyder. The county administration of Summit, Ohio, demanded full integration of voice and data, easy network expansion and many feature options; it got what it wanted when Intouch Communications installed a Digital Transmission Inc. 585 LPABX

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Feeding frenzy grips competitive CPE market

The interconnect market is hot. The heat is not from sales, but from the competition fast on many CPE suppliers' tails. As technology becomes more advanced and customers more picky, some of those CPE providers could lose their alligator shoes

SUSAN UBIS, Staff Editor, and CZATDANA INAN, Marketing Development and Research Director

To say the customer premises equipment market is competitive would be like calling Walter Payton a "good" football player. The CPE market is *not* "competitive." It is *extremely* competitive.

Market pressure is intense. CPE suppliers feel pressured to price competitively, to provide the best and most comprehensive service, to stand out from the crowd. But there is a limit to how much pressure anything can withstand.

The CPE arena is feeling these strains. In more than a few places in the last year, companies were squeezed out of the market. The tables on the following pages, produced by *Telephony's* Market Research Department, chart the numbers behind the story.

Siemens bought Tel Plus Communications, folding it into its Information Systems group. Isoetec acquired Jarvis Corp., merged with Vodavi and bought Contel's Executone unit. BellSouth purchased Universal Communications Systems. Star Datacom Inc. picked up Henkels & McCoy/Telecom Systems. And Inter-Tel bought Interconnect Communications Corp. (See Table 1.)

Methodology

This report is based on exclusive primary research conducted by *Telephony's* Market Research Department this past March.

Each of the customer premise equipment providers was queried on sales, costs of sales, orders booked and inventory levels. In addition, the companies were asked to report their installed base of PBX and key system lines, number of employees and locations and their equipment line.

The estimates that appear in this report have been cross-checked with the companies, and in the case of the RHCs' CPE subsidiaries, with other telecom industry analysts as well as financial analysts, and are believed to be accurate within ±5% of the estimated amounts.

Several other deals are on the table. Mitel has made an offer for RCA Telephone Systems. TIE/communications has its eye on ABI American Business Phones, while AIM Telephones has targeted Gray Communications.

Piece of the Pie

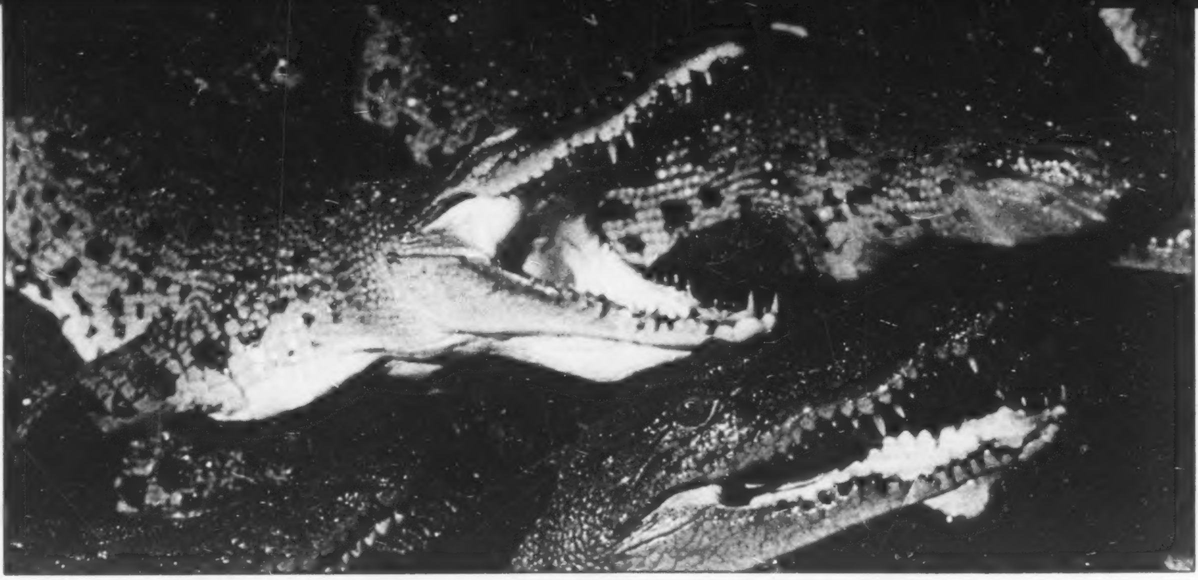
Market conditions will continue to eat at many interconnects' piece of the pie. The Bell regional holding companies have made a huge dent in the market in the last two years. In 1986, the seven RHCs collectively had an estimated $1.34 billion worth of CPE sales. In 1988, they are expected to garner $1.89 billion, or almost one-fourth of an interconnect market estimated at $8 billion (Table 2). But the regionals stand on somewhat shaky ground themselves.

The RHCs are an extremely complicated lot, according to Northern Business Information analyst Francis McInerney. Pacific Telesis brought bad news to other RHCs when it joined forces with Northern Telecom to sell Meridian SL-1 and SL-100 products in California and Nevada, barely a year after it bought Northern's CPE business, he says *(Telephony, March 7, page 9)*. Combined with the sale of PacTel Spectrum to IBM, Pacific Telesis is sending a signal to other RHCs of what may come *(Telephony, March 28, page 3)*. It is clearly "retreating to the commodity provision of bandwidth," McInerney says.

On the other hand, BellSouth and Ameritech are "on the leading edge," as McInerney puts it. Ameritech in particular, he says, is "really trying to get beyond the business of a simple utility," most notably through its involvement with David Systems. The problem is that it does not have account management expertise and has limited capabilities, he notes.

The RHCs are in a period of retrenchment, accord-

continued on page 34



TELEPHONY'S COMPOSITE INDEX OF BUSINESS CPE PROVIDERS: ACQUISITIONS & MERGERS DURING 1986-88

	CPE Sales ($000,000)			
	1986	1987	1988	Acquired by:
Non-Affiliated				
Tel Plus Communications, Inc.	$ 255.0	$ 283.0	$ 320*[a]	1987 Siemens
RCA Telephone Systems	120.0	130.0	140*[b]	1988 Mitel (proposed)
Universal Communications Systems	86.9	106.0	[c]	1987 BellSouth
Norstan	68.1	96.2	86.0	
Communications Corp. of America	40.0	27.1	22.0	
Jarvis Corp.	36.0	38.0	40.0*[d]	1987 Isoetec[g]
Communications Consultants, Inc.	28.2	25.9	21.0	
ABI American Businessphones	25.5	28.1	30.0*[e]	1988 TIE (proposed)
Gray Communications	25.0	22.3	25.5[f]	1988 AIM Telephones (proposed)
Standard Telecommunications	19.4	31.0	38.0	
Henkels & McCoy/Telecom Systems	19.0	21.0	25.5	1987 Star Datacom Inc.
	$ 723.1	$ 808.6		
Independent Affiliates				
Centel Business Systems	$ 262.0	$ 332.6	$ 375.0*	
Contel/Executone	268.0	305.0	335*[g]	1988 Isoetec/Vodavi
SNET Systems, Inc.	53.6	54.6	100.0	
Rotelcom Network Systems	76.2	72.3	56.4	
	$ 659.8	$ 764.5		
Up & Coming (and profitable)				
ATS Telephone & Data Systems	$ 14.2	$ 12.6	$ 16.4	
Communications World Int'l.	8.1	11.0	13.0	
Interconnect Communications Corp.	6.8	22.7[h]	38.0[h]	1987 Inter-Tel[c]
	29.1	46.3	67.4	
TOTAL	$1,412.0	$1,619.4		

* estimated by Telephony

[a] now part of Siemens Information Systems, Office Systems Manufacturing

[b] a subsidiary of General Electric, RCA Telephone Systems is one of the largest distributors of Mitel products

[c] now part of BellSouth Enterpises, Communications Systems Group

[d] Isoetec sales climbed from $62 million in 1986 to $100 million in 1987

[e] proposed acquisition of ABI follows TIE's acquisition of Honeywell Communications Services Business

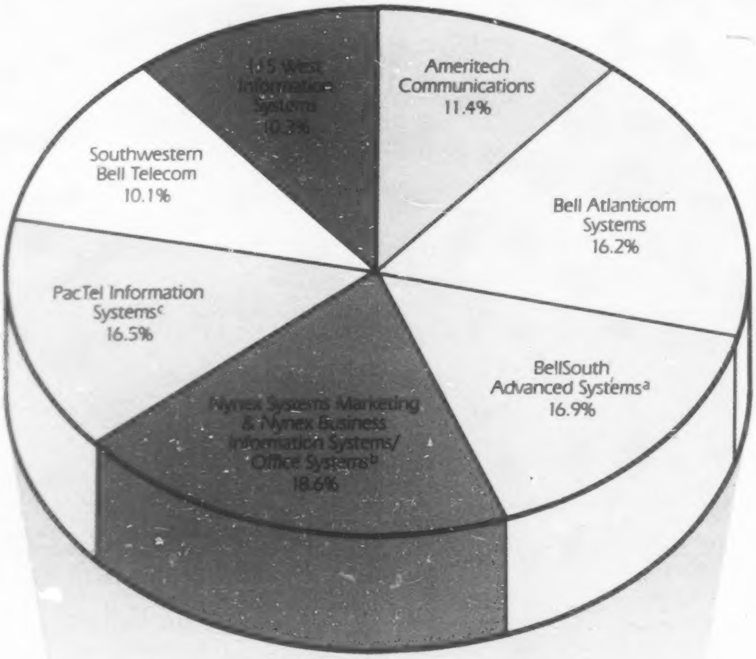
[f] NEC has 10% stake in AIM Telephones with option for majority share

[g] 50/50 acquisition by Vodavi Technologies and Isoetec Communications in February 1988. Vodavi moved to acquire Executone in December 1987, just prior to Vodavi/Isoetec agreement in principle to merge

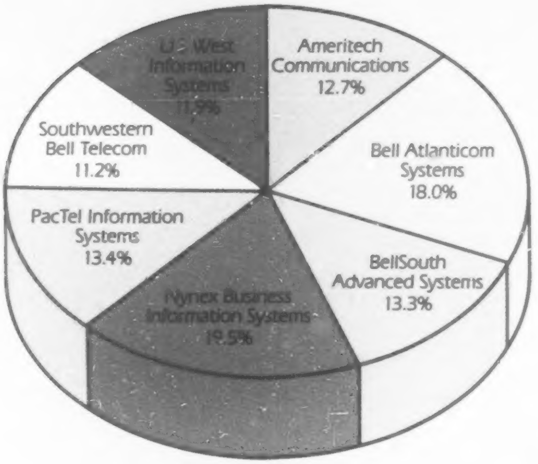
[h] Inter-Tel's direct sales division (includes ICC acquisition)

REGIONALS' 1986 vs. 1988 CPE SALES*

1988: $1,883,000,000



1986: $1,336,000,000



* estimated by Telephony

[a] includes Universal Communications Systems acquisition

[b] assumes Manhattan-based financial houses embark on SEC recommended system upgrades

[c] includes acquisition of Northern Telecom's western region Office Systems Division and PacTel Meridian Systems joint venture

Feeding frenzy *continued*

ing to Gerald Mayfield, president of DMW Enterprises. None of the Bell companies is doing well, Mayfield comments, adding that they are finding their regulated pre-tax profits are now looking very good. They're trying to compete with interconnects, but haven't been able to take advantage of their strengths, he adds. The trend may be toward third-party sales agreements involving T-1 and data, similar to the recent Bell Atlantic-Avanti deal, Mayfield concludes.

As for the market as a whole, overall consolidation will continue, according to Shearson Lehman Hutton Inc. analyst Charlie Nichols. But he adds, the bigger deals have already been made; what is left is a realignment of the smaller interconnects. The shuffling of the deck has left the Japanese holding an odd hand, he comments, in terms of how they will distribute their products in the U.S. More Japanese manufacturers will turn to the RHCs as distribution outlets, Nichols contends.

Analysts have varying views of where the interconnect industry is headed, but agree that it will be a tough road.

"Pricing pressures will remain, but they won't be as bad as the last two years," Nichols predicts. Growth will be in ancillary, adjunct products, such as voice mail, facsimile and other "non-traditional areas," he says.

Margins on PBX sales are "razor thin," says Mayfield. "The traditional market is not attractive."

The biggest problem, aside from pricing, will be the ability to provide broad-based information management services, McInerney says. Not many can offer this, he comments. The industry will likely see more niche players selling only voice-type systems and products that eliminate service calls, or what he calls the commodity end of the market.

The RHCs could benefit from an emphasis on service, Nichols says. "Centrex has done well in the last few years because it takes away the risk and hassle," he comments. What the RHCs may do is reduce their geographic reach and focus on a more local level. "The RHCs have become more realistic and more pragmatic than two years ago," Nichols adds. If they decide to stay in the market, and he thinks some may get out, they will likely focus on the kind of products that can keep close customer contact, he believes.

"There are definitely some tough years ahead for interconnects," McInerney says. "There is no easy distribution path. Distribution layers are actually imploding.

"The entire industry today is customer relations." Installation and maintenance issues are key, he says, making vertical integration less attractive. "How many companies want to run everything from R&D to sales and services?" he asks. "It just doesn't make sense anymore."

From the Horse's Mouth

CPE interconnects echo analysts' dry evaluation of the situation.

"Oversupply from manufacturers and overlap in distribution channels, as well as depressing profit margins," are key concerns, says Donald R. Mulder, Centel Business Systems vice president-marketing. Changes in the marketplace will result in a decline in revenues resulting from lower manufacturing costs and on-system sales, he adds. Higher reliability on maintenance sales and simpler configurations on other sales also will be more likely, he says.

"Delivering quality service to customers is *the* issue and will continue to be *the* issue 110 years from now," comments A. Thomas Kelly III, president of SNET Systems/SNET Diversified Group. "Conscientious and creative cost control continues to be a primary consideration in all aspects of doing business. We strive for continuing business partnerships that allow us to monitor and meet changing communications needs over the long-term growth of a business."

Market conditions will continue to eat at many interconnects' piece of the pie. The Bell regional holding companies have made a huge dent in the market in the last two years. In 1986, the seven RHCs collectively had an estimated $1.34 billion worth of CPE sales. In 1988, they are expected to garner $1.89 billion. . . .

Another key concern is the technical and financial resources of a vendor. "With margins eroding due to extreme price competitiveness, it is becoming increasingly clear that the PBX vendors that will survive are those that are stable, established and financially very sound," says H. Werner Krause, president and CEO of Siemens Information Systems and Tel Plus Communications Inc. "This is a factor that customers must consider when investing in telecommunications—will the vendor they buy from today be around to support them tomorrow. . . ? Compounding this issue is the increasing complexity of communications applications, requiring extensive pre- and post-sale support for customers."

Still another issue, Krause says, is the need for vendors to articulate the benefits of new technologies to customers. The industry as a whole has a responsibility to educate customers, he says.

That may or may not be the answer. As customers become more sophisticated, demanding more and better services, it is likely some interconnects will feel the squeeze of their alligator belts. ■

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MONDAY, APRIL 25, 1988

Telephony

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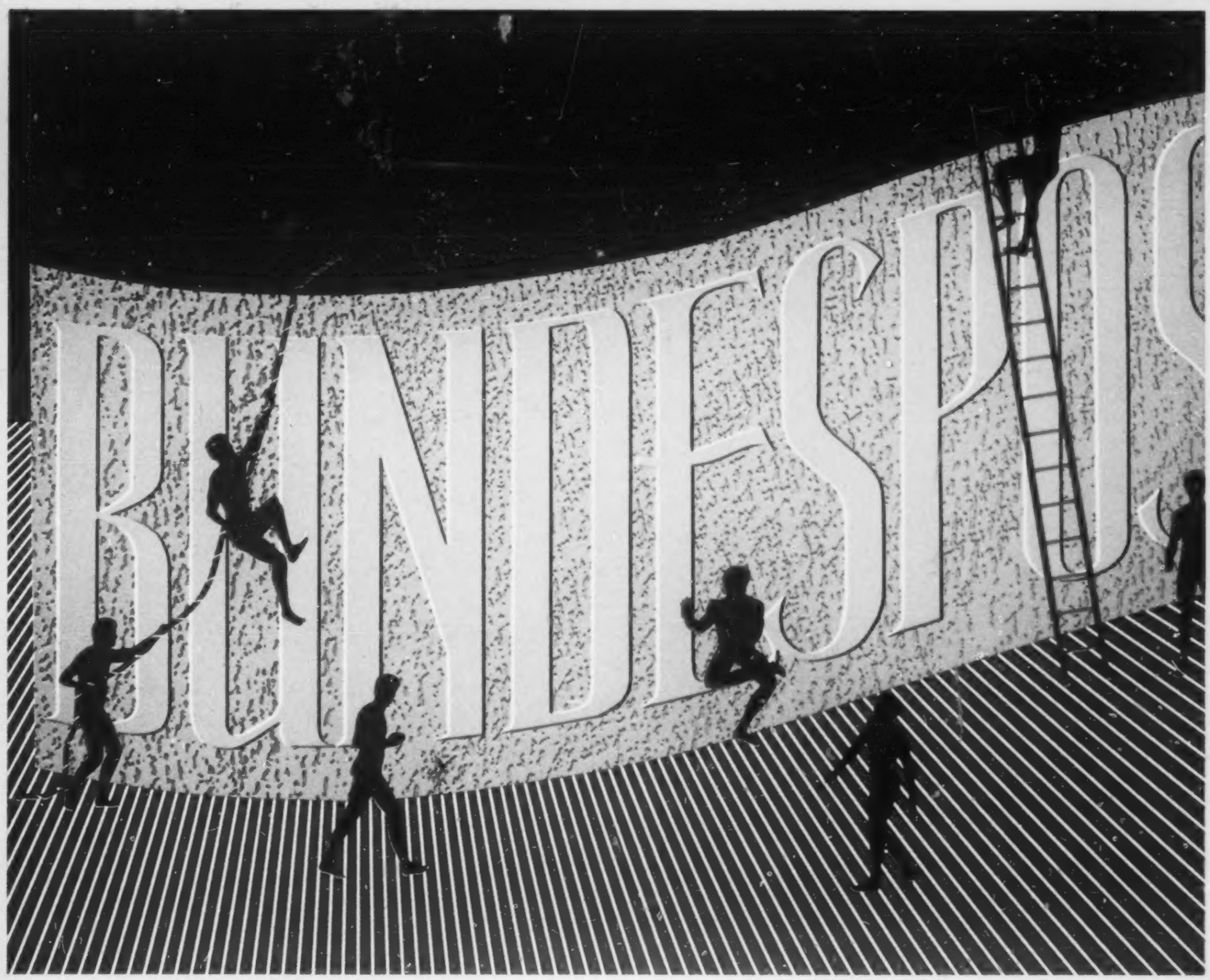

SLIPPING THROUGH THE CRACKS

The monopoly wall will still be intact in Germany when liberalization knocks in May

ONA PLANS UNDER HEAVY FIRE

FCC urged to reject RHCs' strategy

AT&T MOURNS OLSON, ELEVATES ALLEN

New chairman vows to implement Olson's plans

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MONDAY, APRIL 25, 1988 Volume 214, No. 17

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

Liberalization is coming to West Germany, but the monopoly walls clearly have not fallen down. Cover design by Michael Sonnenfeld; art by AGS&R.

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Text transmission in Europe: Telex, teletex and facsimile all share a piece of the pie

JOHN WILLIAMSON, International Editor

Five years ago, the future of text communication in Europe seemed clear.

Teletex would, it was thought, make major gains at the expense of telex, and facsimile, "the sleeping giant of telecommunications," would increasingly join hands with the telex replacement in a new words-and-graphics medium.

Today, though the sleeping giant has certainly awoken, it's usual to find facsimile married to the personal computer in multifunction set-ups—although companies such as Siemens appear to think that teletex, facsimile and voice are viable in the integrated services digital network, or ISDN, environment. Meanwhile, telex refuses to lie down. For example, telex traffic grew by 7% in the U.K. last year. By contrast, in most locations, teletex refuses to get up.

At the same time, considerable progress has been made toward standardization of electronic mailbox systems. There has been a downward price trend in mobile text systems that, like electronic mailbox systems, emphasize message content rather than appearance.

The relative failure of teletex, or super-telex, is clearly illustrated by the gap between earlier projections of terminal populations and current numbers.

In West Germany, which can lay claim to being the "cradle" of the new service, the Bundespost calculated in 1982 that around 40,000 terminals would be in use nationally by 1987, rising to 130,000 by 1992. In fact, by the end of 1987, a mere 18,000 terminals were recorded, and no one is predicting with any degree of confidence a major uptake in the future.

Failure

Even so, Germany is probably the brightest spot on the horizon for the teletex community.

The U.K., which was supposed to boast a terminal base of 35,000 by 1986, almost certainly has less than Germany does now. No one can be absolutely sure about this since British Telecom is not the sole supplier of terminals, and traffic is carried over both the dial-up telephone network and the packet switched data network.

However, BT recently shut down its teletex gateways between the telephone and data networks, and between these and the telex network. A BT spokesman said that use of the gateways was insufficient to justify their retention.

A number of reasons have been advanced for this poor showing. On paper, teletex has substantial advantages over the telex service it was designed to replace. It is up to 30 times faster than telex. It uses upper and lower case letters. And, being software-based, it can accommodate different alphabets and have very sophisticated message preparation and processing capabilities.

Unfortunately, the extreme flexibility embodied in the teletex standard acted not to accelerate the introduction of the service but to engender uncertainty among terminal suppliers and would-be users. It was also realized that telex's 50 baud speed was not actually that much of a problem since average telex messages are only 400 characters long. Furthermore, teletex's basic 2400 b/s speed is not particularly useful for bulk data exchange.

With low uptake, terminal prices remained at a premium and "black box" teletex add-ons for word processors and personal computers were slow in coming to the market. Critically, there was little interest in teletex in North America. In these circumstances, the medium went into something of a commercial limbo.

Success

While teletex languished, facsimile usage expanded at a remarkable rate (Figure 1). The British Facsimile Industry Consultative Committee, or BFICC, reports that 96,000 transceivers were in use in the U.K. last year. The BFICC calculates that a further 150,000 units will be added in 1988. In 1986 it was estimated that there were only 200,000 transceivers in the whole of Western Europe.

Facsimile scores over other forms of text transmission systems because it is able to communicate graphics, photographs, logos and signatures in addition to text in any script. Moreover, operation of a facsimile transceiver requires only basic manual dexterity instead of the keyboard skills required by other text systems.

These attributes make facsimile a potential candidate for the mass professional market in much the same way that photocopiers are at present. Indeed, many models also function as local photocopiers. In the past, high transmission costs and terminal prices confined facsimile to specialist and large user applications. Today, A4-sized documents are transmitted in under 20 seconds, and the price of a basic terminal has fallen to around the level of medium-range cellular telephones.

In late March, British Telecom brought its no-frills CF 9 desktop facsimile to market at just under the psychologically important £1000 ($1800) price level.

Interestingly, BT has a more ambitious projection than the BFICC for facsimile growth, estimating that some 180,000 additional units will be shipped in the U.K. in 1988.

Although telex has demonstrated surprising resilience—due in part to the technology that allowed its physical relocation from special-purpose telex centers to individual users' desks—it is expected that in the medium term the service will lose ground to facsimile and X.400 electronic mail.

A recent study from the U.K.'s Logica consultancy estimates that although telex currently accounts for 70% of European electronic messaging connections, by 1993 it would fall to less than 25%.

The Logica study, entitled "Electronic Mail Product Markets," makes the point that, whereas telex and teletex have been primarily European-sponsored services with indigenous suppliers strong in their domestic markets, both facsimile and electronic mail are driven by technological and market developments outside Europe.

Logica believes that Japanese companies will continue to dominate the facsimile market and public electronic mail will be largely dictated by trends in the U.S. where the main system and service providers are based.

Bearing in mind the fate of teletex, it may be of some significance that the CCITT X.400 committee was one of the few dominated by U.S. companies.

Although the main thrust of the Logica argument seems incontestable, Europe is certainly not standing still so far as X.400 electronic mail is concerned. The U.K. staked its claim to fame with BT's purchase of the former ITT Dialcom organization. Last year, it inaugurated a £5 million X.400 service. This will build on the foundations laid by such electronic mailbox systems as BT's Telecom Gold.

Elsewhere in the region, interest also has been strong. In October 1987, for example, the telecommunications administrations of Belgium, Norway and Sweden were involved in the formation of the Telemail International Licensee's Association, an organization designed to foster and promote international electronic mail and information exchange services based on X.400 standards.

Des Kilfeather, communications products manager of U.K. X.400 company Systems Designers, says, "Every PTT will be under pressure to install X.400 in the next five to 10 years."

On the Road

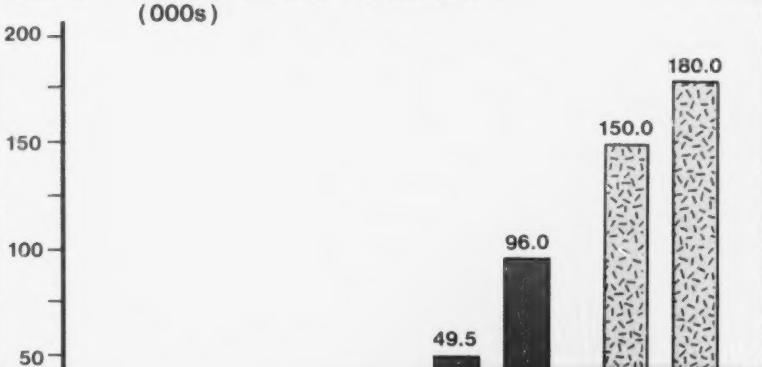
Mobile text communication is in its infancy in Europe. The radio frequency environment is less than ideal for the unambiguous transmission of character coded information or binary data, and achieving an acceptable error level has usually meant relatively sophisticated and expensive modems.

Earlier this year the British company Commsolve International claimed to have reduced the cost of message terminals used on mobile radio networks by around two-thirds. It did this by combining a standard modem, an improved version of an as-yet-undisclosed U.S. computer communications software, and the miniature E-Note message terminal from Trend. Commsolve believes that over 10% of the U.K.'s current 1 million cellular and private mobile radio users are candidates for this type of 300 baud terminal.

The company hopes to get British Telecom and the two U.K. cellular operators to adopt the system as standard. Since it is transparent to the type of mobile radio system, Commsolve is talking to distributors in Europe and the Nordic countries, and is soon to announce nationwide distribution in the U.S. through an airtime retailer in Miami.

According to a Commsolve spokesman, "Within five years, most companies with mobile fleets will have this kind of system."

FIGURE 1 FAX SHIPMENTS--PLACEMENTS (000s)



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MONDAY, MAY 2, 1988

OUTSIDE PLANT ISSUE

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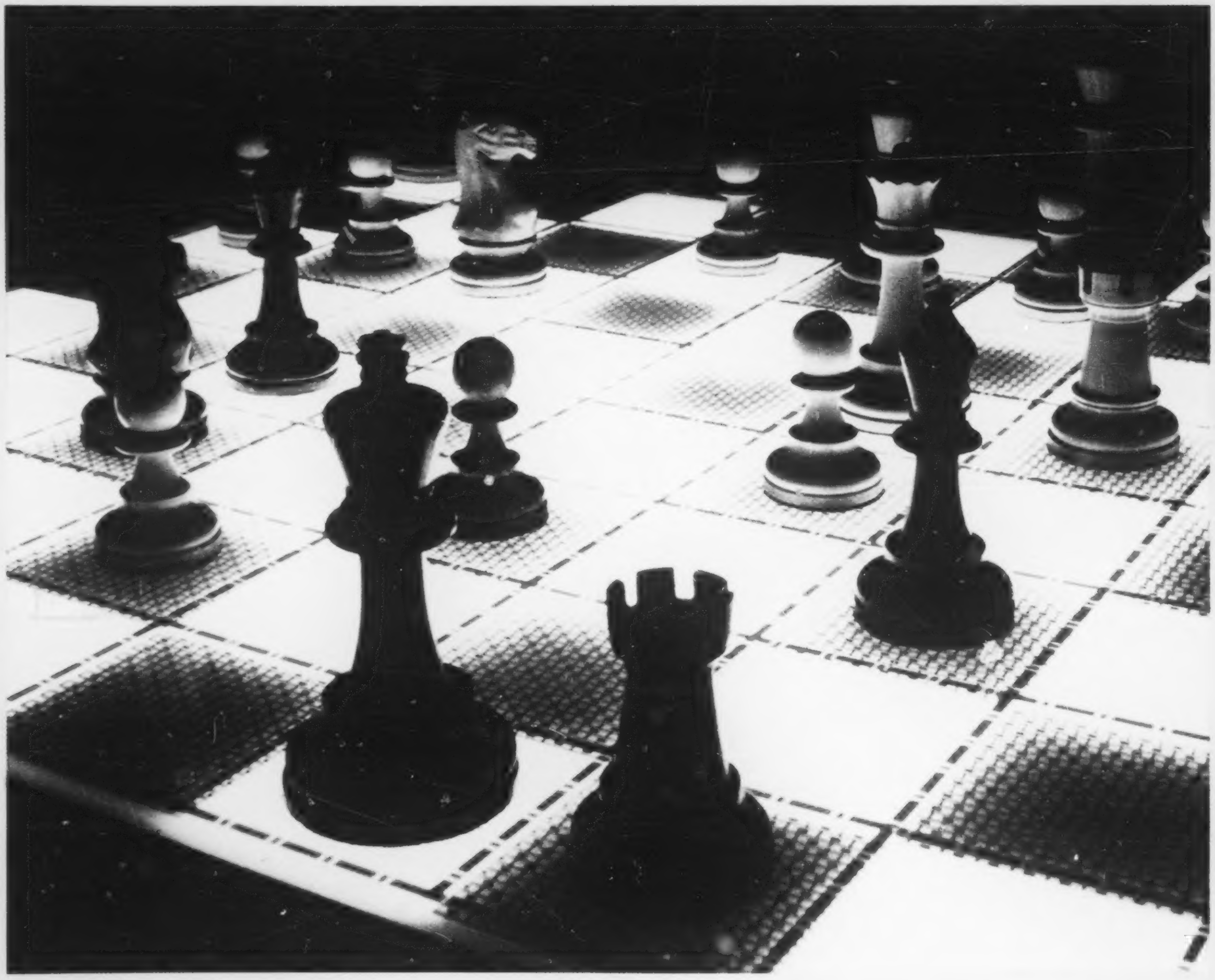

MAKING THE INTELLIGENT MOVE

Success for service providers in the 1990s depends on the intelligent network

WILL AT&T EXIT THE COMPUTER GAME?

Cassoni's departure fuels new speculation

FUJITSU, U S WEST TAKE ISDN COMMERCIAL

RHC to distribute Fujitsu ISDN terminals

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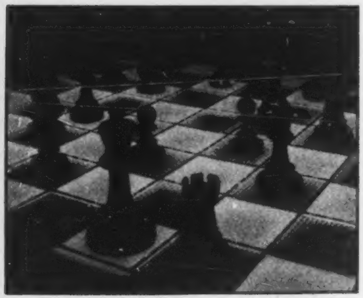

Service providers must plan their next move carefully if they are to make the most of the intelligent network of the 1990s. Cover photo by Peter A. Simon, The Stock Market

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spite a rise in after-tax earnings.

Cincinnati Bell saw net income jump 24.5% to $20.2 million or 64¢ a share, on revenues of $172.4 million, up 20%. "All segments of our business had exceptional results in the first quarter, said D.H. Hibbard, chairman and chief executive officer. Cincinnati Bell Telephone reported strong access line growth, and increased revenues from nonregulated business sales activities. The telephone company unit, Cincinnati Bell Long Distance and Anixter-Cincinnati, the supply operation, benefitted from growth in the service region, said Hibbard. Cincinnati Bell Information Systems and Cincinnati Bell Enterprises also posted profits.

Contel Corp. reported a 7% increase in income for the first quarter of 1988 to $58.9 million, based on revenues of $741 million, an 8% increase. Earnings per share were 75¢, up 6%. The Telephone Operations Sector led the way, reporting record first quarter revenues and earnings, said Contel President and Chief Executive Officer Don Weber. The local telco unit earned $74 million on revenues of $529 million. The Federal Systems Sector posted a modest profit of $255,000, while Contel Information Sector recorded a 21% increase in revenues to $140 million, but lost $3.9 million, due in part to the soft post-crash market for financial trading systems from Contel IPC. Contel ASC, the satellite unit, posted a small profit, according to Contel. ■

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NewVector stock nets $89 million

U S West will realize a one-time after-tax gain of approximately $89 million during the second quarter from the sale of 9.66 million shares of Class A common stock of U S West NewVector Group Inc.

U S West sold 8.4 million shares of NewVector stock on April 6. The underwriters handling the sale subsequently exercised their option to buy an additional 1.26 million shares for public sale, said U S West.

U S West retains 81% ownership of NewVector, which is a diversified cellular telephone and mobile communications company engaged primarily in operating cellular telephone systems.

Corrections

In an April 25 story on GTE's reorganization, *Telephony* incorrectly listed how GTE's telephone companies would be divided among four new regional units. That determination has not yet been made by the company.

A typographical error in the table accompanying *Telephony's* April 11 cover story on the customer premises equipment market implied that Inter-Tel Inc. is a subsidiary of another company. Inter-Tel, based in Chandler, Ariz., acquired Interconnect Communications Corp. in 1987 and is an independent company.

In *Telephony's* April 4 profile of BellSouth Corp., Dean L. Wilde was incorrectly identified. Mr. Wilde is vice president of Strategic Planning Associates Inc.

5/13/88

AN INTERTEC PUBLICATION

MONDAY, MAY 16, 1988

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

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What
Do Users
Want?

ICA BOARD MEMBERS SOUND OFF

Six end users answer this often-asked telecom question in a lively roundtable discussion

ILLINOIS BELL FIRE CRIPPLES CHICAGO AREA

Phones dead for 35,000 after fire ravages CO

ISDN: AN EMBARRASSMENT?

BellSouth's Strohmeyer urges industry stance

MONDAY, MAY 16, 1988 Volume 214, No. 20

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INTEGRATING VOICE AND DATA COMMUNICATIONS

What Do Users Want?

Six movers and shakers in the end user community speak on the record about the Federal Communications Commission, the local exchange carriers and equipment manufacturers. Cover design by Michael Sonnenfeld, photos by Don Tremain.

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Business users hunger for more data services

Advanced services like voice messaging, video teleconferencing and facsimile also are increasingly popular. LANs and packet switching are going strong, too

LARRY LANNON, Editor, and CZATDANA INAN, Marketing Development and Research Director

The tastes of business users are changing in the late 1980s.

Once they hungered for PBXs, key systems, modems and statistical multiplexers. Today they thirst for local area networks, private packet switching systems, network management systems, video teleconferencing and voice messaging. And facsimile technology continues to be more appetizing than ever.

But the old staple—network services—continues to do the best.

The Facts

Table 1 shows that network services continue to be the largest single cost item for the corporate community. And it is growing. Expenditures for network services grew from $124.5 billion in 1986 to $133.3 billion last year. They are expected to reach $142.8 billion in 1988 and $152.9 billion in 1989.

Customer premises equipment, or CPE, for voice communications also continues to grow. The business community spent $7.1 billion on voice CPE in 1986 and $7.6 billion in 1987. It is expected to spend $8 billion this year and $8.7 billion next year.

Expenditures for data CPE went from $4 billion to $4.9 billion from 1986 to 1987. This year, businesses are expected to spend $6 billion on data communications CPE. Next year, the figure should exceed the $7 billion mark.

Glossary

ACD	Automatic call distributor
CO	Central office
CAGR	Compound annual growth rate
CPE	Customer premises equipment
CSU	Circuit switching unit
DSU	Data service unit
IVDT	Integrated voice-data terminal
LAN	Local area network
MTS	Message telecommunications service
PBX	Private branch exchange
PDN	Public data network
RIP	Rest in peace
WATS	Wide area telecommunications service

In terms of growth, network services expenditures are growing at a 7% compound annual growth rate in 1988-92, voice CPE at a 4.8% CAGR and business CPE at a whopping 13.5% CAGR.

Behind the Numbers

These growth figures reflect the continuing importance of the public network to the business community as well as the increasingly central role data communications plays in daily business life. The relationship between the two is far from coincidental.

Traditionally, the public network has been a relatively inflexible analog network devoted largely to carrying voice traffic. Modems were necessary to accommodate data traffic, complicating and limiting the use of the public network for data. The volume of data traffic, of course, is a function of the total population of computers and the need to interconnect computers within an organization. As businesses increasingly rely on computers for essential operations, the need to connect computers within an organization increases. Hence, the volume of data traffic increases.

TABLE 1 THE OUTLOOK IN 1988 (IN BILLIONS)

	1986	1987	1988	1989	1988-92 CAGR*
Network Services	$124.5	$133.3	$142.8	$152.9	7.0%
Business Voicecom CPE	$7.1	$7.6	$8.0	$8.7	4.8%
Business Datacom CPE	$4.0	$4.9	$6.0	$7.2	13.5%

Source: Dataquest
*Compound Annual Growth Rate (CAGR)

The public network is changing at precisely the same time, if not at precisely the same pace, that the deployment and use of computers in the business world is changing. These twin changes will condition one another.

The public network is increasingly a flexible, high-bandwidth, digital tool well-suited to carrying large volumes of data traffic. The transition from the old analog network, which was hostile to large-scale data applications, to a new, integrated, intelligent, digital network will take years to complete. But the companies that control the public network are well aware of the value of their fundamental resource and the need to adapt it to contemporary conditions as rapidly as possible. They also recognize they don't have to upgrade the *entire* network immediately to capture a large share of the business community's data traffic.

The business community, on the other hand, is increasingly interested in multidimensional data communications. Rather than be-

continued on page 45

FIGURE 1 NETWORK SERVICES IN 1988

Source: Dataquest
Graphic by *Telephony*
a: Local Services total by Dataquest, breakout by *Telephony*
b: *Telephony* estimate: Of total, 30% to 35% is access, 45% to 50% is usage (including WATS, 800 services, toll), balance includes private lines and CO services, including Centrex, and other, such as miscellaneous inside wiring.
c: does not include local exchange carrier PDNs

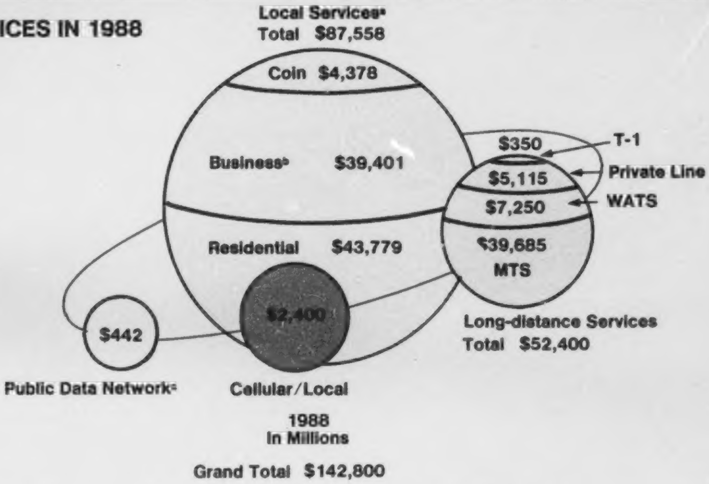

FIGURE 2 BUSINESS VOICE COMMUNICATIONS CPE MARKET

Source: Dataquest
Graphic by *Telephony*
a: business single-line & proprietary sets

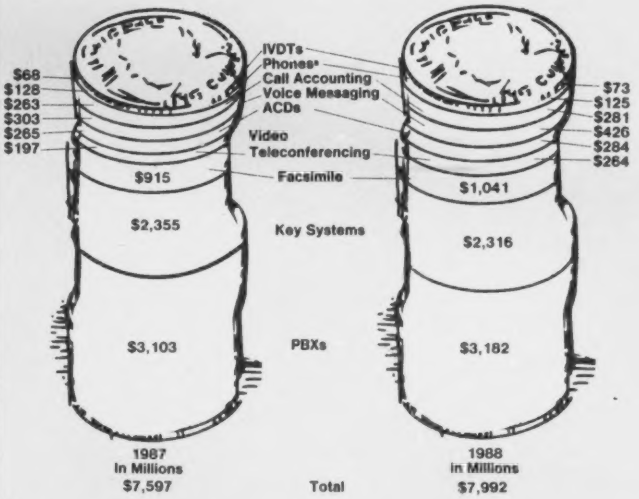

TABLE 2 THE FASTEST GROWING VOICE CPE MARKETS

	1988-92 CAGR*
Video Teleconferencing	26.5%
Voice Messaging	23.6%
Facsimile	17.8%
ACDs	7.1%
Phones	6.9%
Call Accounting	4.4%
IVDTs	2.9%
PBXs	2.6%
Key Systems	0.9%

Source: Dataquest
*Compound Annual Growth Rate (CAGR)

FIGURE 3 BUSINESS DATA COMMUNICATIONS CPE MARKET

Source: Dataquest
Graphic by *Telephony*

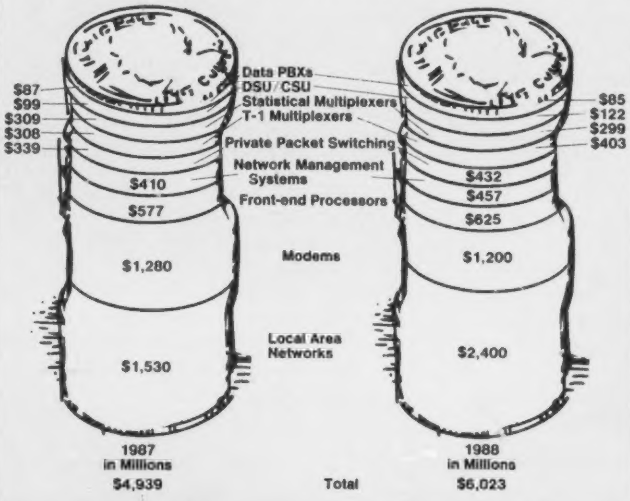

TABLE 3 WINNERS & LOSERS IN THE DATACOM CPE MARKET

	1988-92 CAGR*
Local Area Networks	22.4%
Private Packet Switching	17.0%
Network Management Systems	13.8%
T-1 Multiplexers	12.9%
DSU/CSU	12.7%
Front-End Processors	6.7%
Modems	−6.2%
Statistical Multiplexers	−5.5%
Data PBXs	−4.7%

Source: Dataquest
*Compound Annual Growth Rate (CAGR)

ing content with linking the computers within an organization together in the interests of achieving maximum operational efficiency and centralized management control of information, businesses now are actively attempting to link their computers with the computers of their customers and suppliers. In terms of their use, computers are becoming more like telephones: a means to communicate with all other computers in the world.

This change increases the horizons for data traffic geometrically. Since it also will involve multiple organizations, it will limit the utility of private networks controlled and accessible only by individual organizations. The public network is stationed at the crossroads of the business world, ready to facilitate electronic travel in any direction.

The role of the computer is expanding, not just because there are more computers. They are being used differently.

The transformation of the computer from a management tool to a multipurpose business tool, from an information machine that only serves the internal needs of a business to a machine that connects the internal world with the entire external world, is a fundamental change not only in the larger business community. It is a change with enormous implications for the communications business.

The surge of data traffic once loomed as a threat to the public network operators and delivered a golden opportunity to private network vendors. Now the business community's need for omnidirectional data communications promises to turn the tables. But only if the business community gets what it needs from public network operators.

Needs

Figure 1 reviews the geography [illegible] network service expenditures last year. Note that the expenditures for public data network, or PDN, services do not include the local exchange carrier's PDNs.

Figure 2 focuses on expenditures in the voice CPE market. In 1987, the business community spent $7.6 billion on voice CPE. It is expected to spend nearly $8 billion this year, an increase of 5.2%.

Expenditures for data CPE lag well behind voice CPE outlays. But they are gaining fast. Figure 3 summarizes the facts.

Last year, the business community spent $4.9 billion on data CPE. This year, it is expected to spend $6 billion, an increase of 22%.

The rate of growth in data CPE expenditures exceeds the growth rate in voice CPE expenditures by a multiple of four. You don't have to be a genius to figure out where the business community's needs lie today.

Analysis of products within the voice and data CPE categories confirms the importance of these trends. As Table 2 shows, the fastest growing voice CPE products are video teleconferencing and voice messaging. The long-time workhorses of the voice CPE market are slowing down.

Video teleconferencing is growing at a CAGR of 26.5% and voice messaging is right behind at 23.6%. PBXs show a CAGR of 2.6% and key systems of only 0.9%.

Even within the voice CPE market, voice alone won't cut it. The business community clamors for new capabilities. As the more prescient key system and PBX manufacturers realize, the future of their products depend on their ability to serve as enablers for a variety of new services, particularly data services of all kinds and voice services that do not begin and end with a two-way conversation.

Interestingly enough, integrated voice-data terminals show an anemic CAGR of 2.9%. The IVDT dream received a lot of attention several years ago. The IVDT was going to take technology to the desktop once and for all. Right now, it looks like technology is getting to the desktop, but IVDTs are not. May IVDTs RIP.

Once again, the difference between functionality and a particular product concept is crucial, as the IVDT case demonstrates. Users are particular about functionality and indifferent to product.

On the data CPE side, local area networks and private packet switching systems are showing the most leg today. LANs have a CAGR of 22.4% and private packet systems of 17%. Again, the focus is on data, data and more data.

Tomorrow's Technology

Network management systems are showing a healthy CAGR of 13.8%. Look for that number to grow, particularly if the public network gathers its strength in the business community.

As the business community comes to rely more on data traffic and networks grow more complex, the issue of network management becomes ever more pressing. This is the pivotal issue facing public network operators.

With the advent of private networks, business users have grown accustomed to greater control over their networks. They recognize the power of a flexible, digital public network to address wholly or in part their growing communications needs, but they will never settle for less control than they have now. In fact, as their businesses grow more dependent on network solutions, their demand for network management will increase correspondingly.

No one business can hope to truly control the public network or even, perhaps, the part of the public network it uses. But businesses will demand the ability to manage their specific service or functionality. They also will require higher levels of security as they turn to the public network to transmit confidential competitive information.

The ability of the public network operators to provide that management capability by allowing business users to "view" the portion of the public network they depend on and participate in managing that resource is an issue today. Eventually, "partitioning" the public network to satisfy users' network management, control and security requirements will become the most important technical and operational issue facing public network operators.

If public network operators don't rise to the challenge, they risk compromising a position in the market that, right now, looks more promising than ever. ■

AN INTERTEC PUBLICATION

MONDAY, MAY 30, 1988

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

$3

SHOPPING FOR PHONE SERVICES

Residential users want much more than just plain old telephone service

A SUPER SUCCESS IN ATLANTA

Nearly 15,000 flock to SUPERCOMM

PRICE-CAP PLAN READY FOR REVIEW

FCC leaves many details open for discussion

MONDAY, MAY 30, 1988 Volume 214, No. 22

Telephony

INTEGRATING VOICE AND DATA COMMUNICATIONS

Residential customers shopping for services are skipping the generic aisle to choose from a wide variety of enhanced services. Cover by Dick Luria, FPG International.

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Before USTA and USTSA closed the doors to the World Congress Center in Atlanta, nearly 15,000 had filed in to see what's hot

10 FULL PRICE-CAP PLAN MAKES DEBUT
The FCC churned out a 300-page proposal, but still leaves many issues open for negotiation

11 SIEMENS LANDS PIVOTAL CO BID
Siemens landed its biggest RHC contract when Bell Atlantic agreed to purchase its digital CO switching gear

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The FCC granted Pacific Bell a one-year waiver on CPE rules to conduct a trial of its Project Victoria technology

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By Jim Bowen. Cellular telephones have captured most of the attention paid to land mobile in the recent years, but the number of radio pagers has continued to grow by 20% per year

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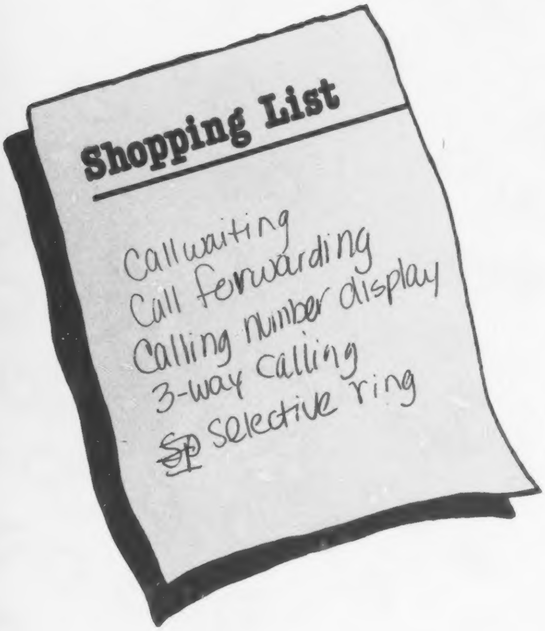
Shopping for services

Residential customers are bypassing the generic service aisle to browse at the more exotic enhanced services counter

DAVID L. WENNER and H. JEFFREY KATZ



Telephone customers just wanna have fun.

Despite the gallant efforts of the telecommunications industry and policy-makers in Washington to assure that universal service is available at reasonable costs, no frills telephone service is not the issue right now. This is the '80s. It is an era when materialism has reached an all-time high and basic is losing to enhanced on almost all fronts.

In fact, a survey conducted and funded by McKinsey & Co. Inc. shows that residential customers are willing to pay for many other services.

The survey, supported by field work from Independent Opinion Research, examined the attitudes of telephone service customers in the United States on a variety of issues—including satisfaction with current services, interest and willingness to pay for new services and capabilities, and demand for one-stop shopping. McKinsey surveyed representative samples in three segments: 250 residential customers, 150 small business customers and 100 large business customers. The results from the residential segment were the most surprising. They revealed a sizable untapped market for phone companies, equipment companies and enhanced service providers.

Survey Results

The results fell into four categories: customer satisfaction, custom calling services, differentiated levels of service and one-stop shopping.

Apparently, the increases in local rates and subscriber line charges that have been put in place since divestiture have not engendered widespread resentment: Residential customers are generally happy with the local service they now receive. We surveyed three key attributes of service quality: clarity/quality of connection, response time for repairs and courtesy and responsiveness of telephone company personnel. More than two-thirds of the respondents were at least satisfied with each attribute; in fact, over 40% reported being very satisfied in every case (Figure 1).

Not only are customers satisfied with their local phone service; they also believe they're getting their money's worth. Fifty-nine percent of the respondents reported that they consider the price they pay for local phone service to be either fair or a bargain.

Untapped Market

Although customers are happy with their basic local service, they expressed a surprising level of interest—and willingness—to pay a specified price for these services. For example, the potential demand for custom calling services greatly exceeds current penetration. For an additional $2 a month, the number of non-subscribers who are willing to pay for call waiting, call forwarding, three-way calling and speed dialing exceeds the number of current subscribers (Figure 2). In fact, for three of these four services, the remaining market potential appears to be more than double the size of the current penetration. If these results are typical of other services as well, there are clearly opportunities for large revenue gains for local phone companies.

High Interest

Customers also expressed an interest in being able to pay for improved levels of service, such as an "Express Service" that would guarantee that all repairs and installations would be handled within four hours. A majority of customers said that they would pay $1 a month for that kind of potential service (Figure 3). More interestingly, 20% of the respondents said they would pay as much as $5 a month for it. Offering multiple levels of service for different customer segments may represent a significant revenue opportunity for phone companies.

Considerable Interest

The services described above are all possible through current technology. We also probed interest levels in new services that will be possible with capabilities like signaling system No. 7, or SS7, and the integrated services digital network, or ISDN. Again, the

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FIGURE 1 RESPONDENTS WHO WERE SOMEWHAT OR VERY SATISFIED WITH SERVICE ATTRIBUTES

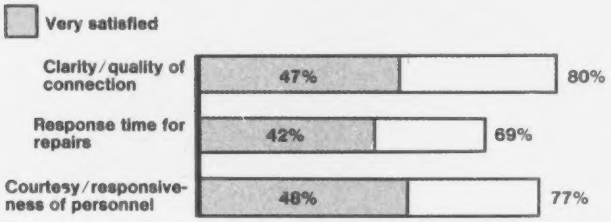
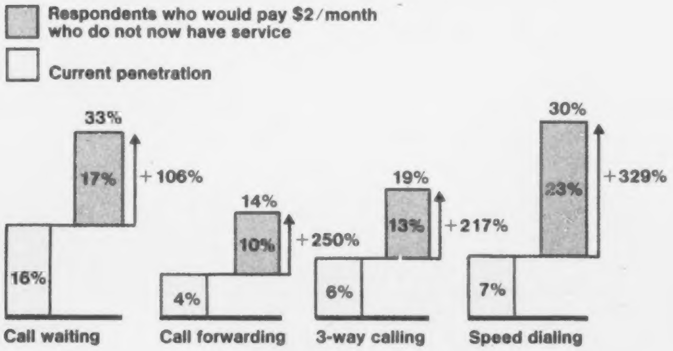


FIGURE 2 CUSTOM CALLING FEATURES



level of interest in additional services was surprising.

In conducting the survey we described some of the new services that will be possible through SS7—such as a display of the calling party's number, a display of the number of the last party who called, blocking of calls from specified numbers, call tracing, a special ring for selected callers and call forwarding for selected callers only. The interest in each of these services ranged from 15% of those we interviewed to 43%. Most of the respondents actually stated they would buy the service at the prices indicated in Figure 4. The most popular services were those that displayed the identity of the calling party, with as many as one-third of respondents expressing purchase interest. But even the least popular services generated as much interest as some custom calling services do today.

Interest in the services that will be possible with ISDN and broadband technology is also strong. We queried the respondents on their interest in high-fidelity telephone calls, high-quality facsimile and videotelephone. If their responses are reflective of most customers, over one-fifth of residential customers would pay $5 per month for high-fidelity voice telephone calling, which could be provided with advanced digital encoding on an ISDN B-channel (Figure 5). That means that for many residential customers, the incremental cost of ISDN could be largely justified through superior voice quality alone. And a smaller, but still significant, number of customers would pay $10 a month for a high-speed, high-quality facsimile if most other residential customers had the equipment to receive the transmission.

As for videotelephone, a majority of respondents were at least somewhat interested, and a quarter of them would pay $10 a month for it. This, of course, is an unrealistically low price at the present time. However, if progress continues in reducing the costs of video compression and coding circuits, the day of the $500 B-channel videotelephone may not be far off. The important point for now is that the public's latent interest in videotelephony appears to be substantially higher than many people had assumed.

Strong Preferences

The strong sentiment expressed by respondents came when we raised the issue of "one-stop shopping"—in other words, having a single source for all their telephone needs. Nearly two-thirds of residential customers that responded said that it was either very important or extremely important to be able to buy all their telephone-related products and services from one company (Figure 6).

Since many customers have expressed that view

FIGURE 3 RESPONDENTS WHO WOULD BUY EXPRESS SERVICE THAT GUARANTEES ALL REPAIRS AND INSTALLATION WILL BE HANDLED WITHIN 4 HOURS OF REQUEST

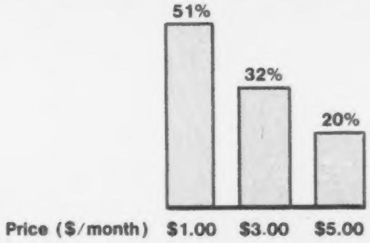
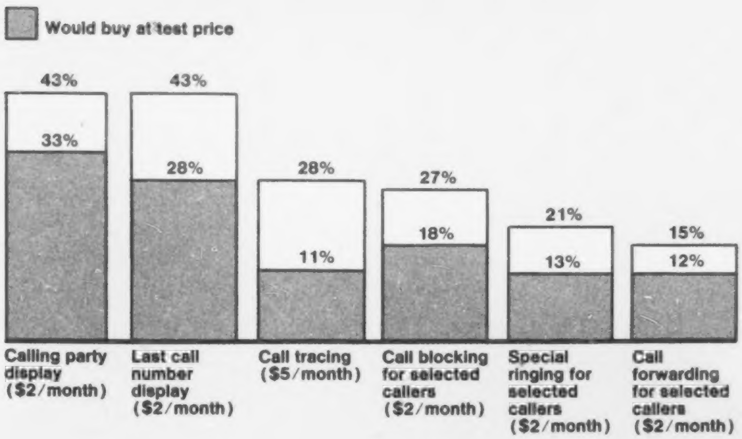


FIGURE 4 RESPONDENTS WHO WERE VERY OR SOMEWHAT INTERESTED IN SS7-BASED SERVICES



since the AT&T divestiture, it does not come as a surprise. What is new, however, is the fact that customers are willing to pay for one-stop shopping. As Figure 7 shows, the majority of customers would forego a 10% discount on long-distance service, and a 20% discount on telephones (equipment), if they could buy them where they obtain their local telephone service. While the Bell System divestiture undoubtedly stimulated price and product/service competition, many customers apparently feel they are paying a price in convenience.

Interestingly, customer demand for one-stop shopping may extend to cable TV service as well. Current CATV subscribers were asked whether they would switch to their local telephone company if it provided cable TV service "over their wires," sent a single bill for phone and cable service, and handled all repairs. Seventy-two percent of respondents said they would switch if the price were the same as their current cable price, and another 14% would switch if the price were 5% cheaper. It is not clear whether this represents a preference for telcos over current cable operators, or simply a preference for one-stop shopping. There is clearly an opportunity for telcos to capture much of the cable TV business on a broadband network.

Implications

These findings are certainly not the final word in market research. Our survey included only a limited number of topics and the sample was only of moderate size. Other research efforts could undoubtedly uncover additional opportunities, and larger samples would produce findings that could be interpreted in terms of additional market segments. The real lesson, we believe, is that industry participants should make significant investments in learning about customer desires and demand levels, and should incorporate those findings into their product and service plans.

Nevertheless, even the results discussed here point to a number of revenue opportunities.

Telco Opportunities

Clearly, telephone companies can benefit from greater marketing efforts. In addition to beefing up traditional advertising or telemarketing programs, telcos might consider marketing approaches not yet widely used in the industry, such as free trial.

They may also want to experiment with new services that are possible with current technology, such as the Express Service described earlier.

In the longer run, there is significant demand for new services that will be made possible with network capabilities like SS7 and ISDN. Telcos should focus more on the revenue opportunities from these technologies, particularly from residential customers, and should view them as more than just network modernization projects and cost reductions. Network planning, service development and marketing should all be driven more directly by customer demand for new features and benefits.

Equipment suppliers also stand to benefit from the high level of interest in the services possible

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FIGURE 5 RESPONDENTS WHO WERE VERY OR SOMEWHAT INTERESTED IN ISDN/BROADBAND SERVICES

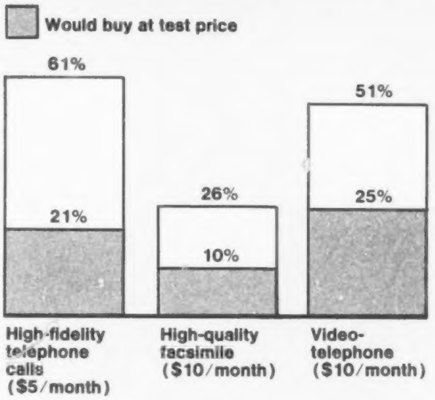


FIGURE 6 IMPORTANCE OF PURCHASING ALL TELEPHONE SERVICES FROM ONE COMPANY (LOCAL, LONG-DISTANCE AND TELEPHONES)

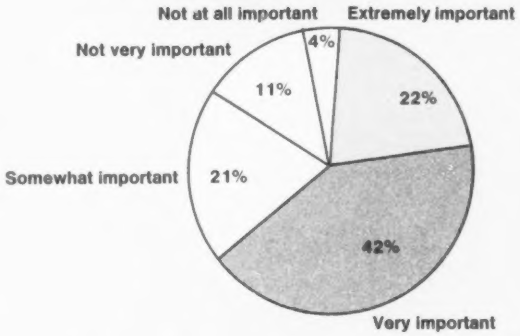
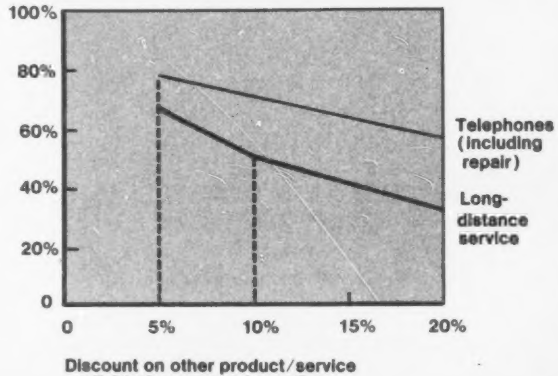


FIGURE 7 INTEREST IN PURCHASING LOCAL SERVICE AND OTHER PRODUCT/SERVICE FROM ONE SOURCE

Percentage of respondents who would purchase both local and other product/service from one source, even without discount available on other product/service from second supplier



through new technologies. Many network services need to be used in conjunction with new premises equipment, such as high-fidelity digital telephones, calling-party display phones, and eventually ISDN videotelephones. To fully realize the potential of these markets, equipment suppliers must closely follow the network developments of telcos (and work closely with them, if allowed) to offer premises equipment that complements new network capabilities.

There will also be opportunities for enhanced service providers, or ESPs. For example, many customers would prefer to have a display of the name (and possibly address) of a calling party, rather than just the phone number. It is questionable whether the BOCs will be permitted to provide such information under the terms of U.S. District Judge Harold Greene's March 7 ruling on information services. With Open Network Architecture, however, an ESP could intercept the calling-party phone number, route the number to a white pages database for a name and address, and then transmit the complete information back to the customer—all within fractions of a second.

One-Stop Shopping

It's not clear how the industry should respond to the strong demand for one-stop shopping. The natural source would be the local telephone companies, since they have the necessary presence and contact with the greatest number of customers. But the divestiture agreement obviously prevents the Bell companies from being single-source providers. Others that currently have direct contact with residential customers and might serve as a one-stop source are the long-distance providers and major CPE suppliers. Responding to this customer need will require new approaches by participants and policy-makers. However, because customer demand for one-stop shopping is so strong, it is worth the effort.

The results of this survey imply that the industry should give even greater emphasis to customer demand. All product development and marketing plans should be based on a full understanding of customer demand for new features and services.

Opportunity will not just knock, it will beat on the doors of the companies that respond to customer demand. ■

H. Jeffrey Katz is a Telecommunications Specialist at McKinsey & Co. Inc.

David L. Wenner is a Director of McKinsey & Co. Inc., Atlanta, and a leader of the firm's telecommunications practice.

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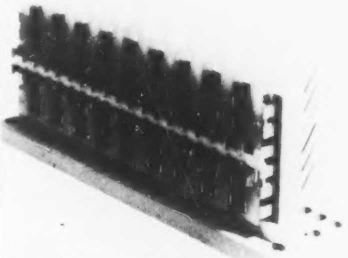

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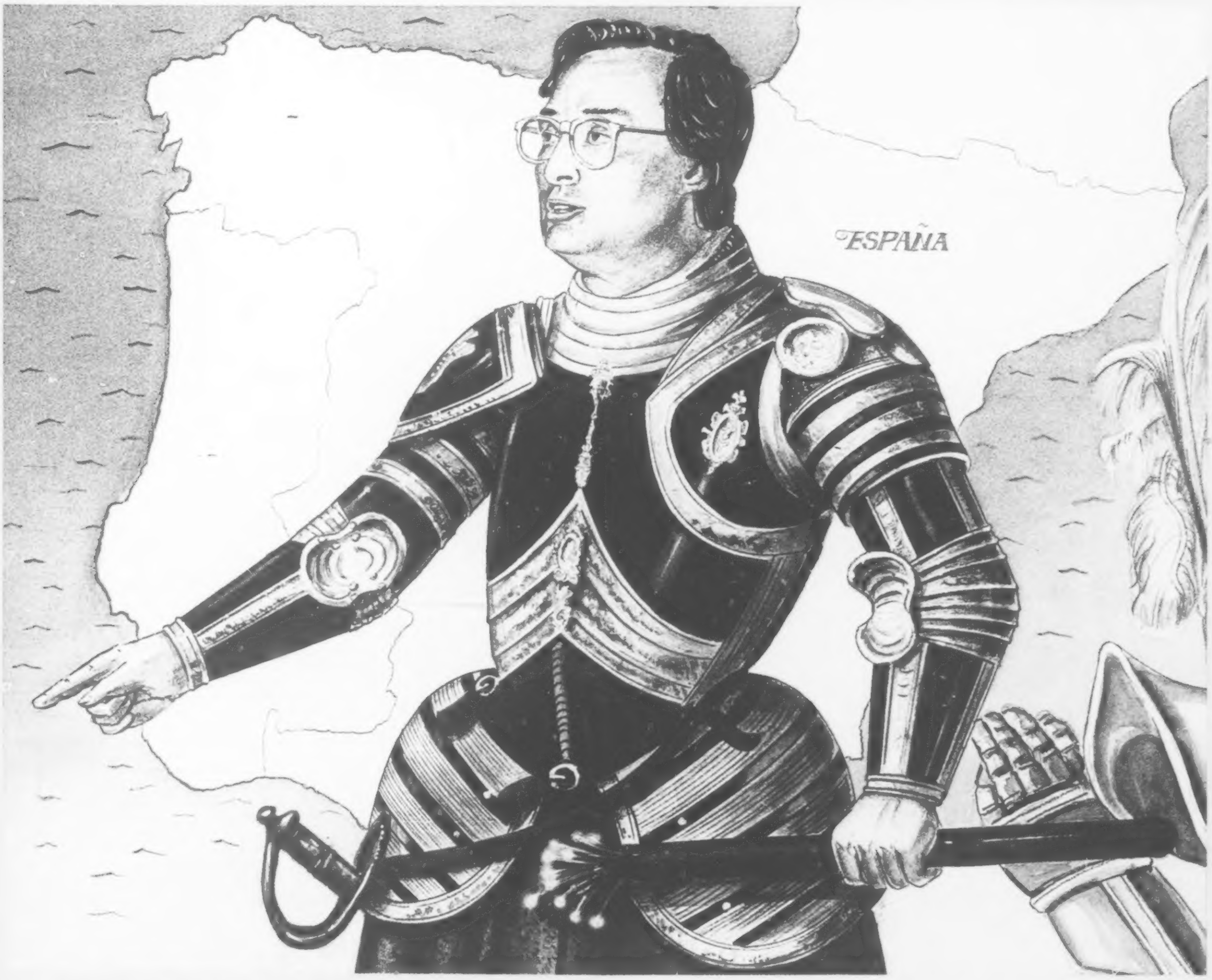

TELEFONICA'S AGGRESSIVE AGENDA

Chairman Luis Solana has big plans for his PTT in the international arena

IBM'S NEW COMPUTER STRESSES CONNECTIVITY

Long-awaited midrange model supports SAA, token ring LAN

SNEDAKER SEES ROSIER FUTURE FOR US SPRINT

IXC ready to put billing system and budget woes aside

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MONDAY, JUNE 27, 1988 Volume 214, No. 26

Telephony

INTEGRATING VOICE & DATA COMMUNICATIONS

Luis Solana, chairman of Telefonica, is a latter-day conquistador in a big hurry to conquer international markets before other European PTTs get the chance. Cover design by Michael Sonnenfeld; art by Bruce K. Kerr

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NEWS OF THE WEEK

8 IBM STRESSES CONNECTIVITY IN NEW COMPUTER
The computer giant's long-awaited introduction of a new midrange computer stresses SAA and token ring LAN support

8 SNEDAKER SEES ROSTER FUTURE FOR US SPRINT
Despite billing system woes, budget cuts and executive defections, the US Sprint president says his company is ready for vigorous competition in the long-distance market

9 GREENE REJECTS INFORMATION SERVICE APPEALS
The U.S. district judge rejects appeals by CompuServe and others to keep the Bell regional holding companies out of their information services turf

9 CUSTOM NETWORK MARKET STILL SCRAMBLED
AT&T, US Sprint and MCI officials butt heads at a Yankee Group seminar, each touting the benefits of its own design concept

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With financial backing from Northern Telecom and working agreements with all seven Bell regional holding companies, DataAmerica launches a "customized carrier" network for data communications and new information services

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By Ellis Booker. For some in the U.S., consumer videotex is like a hot air balloon, finally about to fly free and rise into the clouds. For others, it is like an out-of-control train hurtling toward a canyon pass—and the bridge is out

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By John Williamson. Reckoning that he has two or three years until Europe's other big league PTTs are in a position to compete with Telefonica on equal terms, Chairman Luis Solana aggressively has expanded its reach into international markets

44 VIDEOTEX STRUGGLES TO LEAVE ITS STAMP
By Peter Purton. Mass market, on-line information services have mushroomed throughout Europe, but most have failed to attract a large consumer following

integrating networks, without time-consuming tariff filing procedures.

"We're not going to sit and fold our hands because Tariff 12 came out," noted Kenneth Crandall, senior vice president for US Sprint. "I don't think it changes things very much."

Crandall, along with Michael VanZetta, MCI's senior marketing manager, was quick to point out recent successes against AT&T, such as a $108 million contract awarded US Sprint and Illinois Bell by the state of Illinois, and a Merrill Lynch contract won by MCI.

Rumors also circulated that MCI had recently supplanted AT&T at Continental Insurance in New York, and that it had captured the Dun & Bradstreet account against an AT&T Tariff 12 pitch.

The optimism was not convincing to all of the nearly 100 vendors, users, resellers and consultants at the seminar.

"I think you guys are being Pollyannish," said Yankee Group Managing Director Howard Anderson. "Tariff 12 is going to be very appealing to major corporations. To put up a sales pitch that says, 'We do everything better than anyone else,' is probably not going to fly."

One of the attractions of a Tariff 12 offering is AT&T's ability to offer "end-to-end" solutions and to do so with its own equipment, Anderson noted. These capabilities cut down on users' staff requirements, and enable AT&T to take an aggressive pricing approach, he said.

"This is either going to make you respond and lower your costs, or you're going to lose market share," he warned.

The importance to both AT&T and the smaller carriers of securing large accounts for integrating data, voice and video transmissions rang loud throughout the seminar.

VanZetta described the market as one MCI strategically needs to have a foothold in and to win in. "The users that we're talking to are going to help provide the technological leadership we need to bring to the marketplace, as well as the revenues I feel are critical for us going forward," he said.

Observers at the seminar interpreted AT&T's formation of a Systems Integration Division within its Business Markets Group and an alliance it is reportedly forming with Computer Sciences Corp. as moves to strengthen its assault on the custom network market.

AT&T has placed four contracts under Tariff 12, with the Department of Defense, Dupont, Ford, and General Electric. The FCC is currently investigating the legality of all but the DOD contract.

While the four accounts serve as revenue generators, they also potentially play the technology development role described by VanZetta. AT&T's new Bandwidth Management System, for example, was developed as part of GE's Tariff 12 system, it was noted. Similarly, some sources said a Universal Network Management Architecture product in use with a Tariff 12 customer may soon emerge as a general AT&T offering.

On the regulatory side, former FCC Chairman Richard Wiley summed up the competitors' opposition to Tariff 12, noting that they "see it as a means by which [AT&T] can circumvent dominant carrier status." He described the agency's challenge as reconciling that status with AT&T's "competition with the Allnets, the Sprints and the MCIs of the world, in a specific market niche."

AT&T Division Manager of Federal Regulation Stub Estey said Tariff 12 does not afford the dominant carrier an opportunity for anti-competitive pricing, since filings must show that the company will have a positive net revenue from a sale. "As long as our rates for these services cover our costs, which they do, they are not anti-competitively low."

Allnet Deputy Counsel Roy Morris disagreed, contending that AT&T can take a supermarket pricing approach by lowering tags on Tariff 12 sales to below costs while raising prices in other areas.

Morris took issue with what he saw as the potential dizzying effects of Tariff 12 and Tariff 15 on industry pricing, likening AT&T competitors' traditional behavior to a tail following the dog. "But when the dog starts chasing the tail, you get a spiral," he said, apparently alluding to the price discount provisions of Tariff 15.

Concerns were also voiced that the cumbersome process of tariff filings may steer users shopping for custom networks away from AT&T.

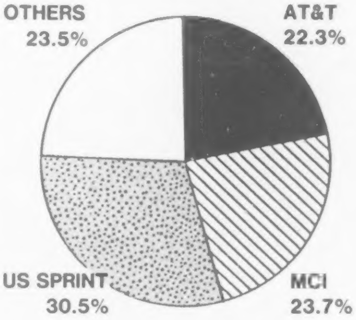
Stan Welland, manager of corporate telecommunications for GE, described the procedure as a disadvantage for AT&T. At the time he was choosing a custom network, he said, MCI and Sprint were not viable alternatives. "If we were to choose today, it could be a different story," he said, being careful to note that "we're happy with what we have."

AT&T's Estey would not attribute any lost accounts to the onus of FCC paperwork, but conceded he has detected some leeriness among potential customers. The federal government, in shopping for vendors for its FTS 2000 system, for example, has told the FCC it would not consider the system to be subject to Tariff 12 filings if it chose AT&T.

Another potential AT&T customer, Estey said, has hired a counsel to determine whether the FCC would subject an AT&T installation to Tariff 12 regulation.

One consensus that emerged from the two-day seminar was that the complex strategies and myriad alliances involved in chasing the custom network market have blurred distinctions in the cast of characters that includes carriers, users as resellers, network systems and network equipment vendors, Bell operating companies and others.

FO MILES IN PLACE THROUGH 1989, BY COMPANY



Kessler projects FO expansion

Michael Warr
Technical Editor

Fiber optic cable in the U.S. will be extended by 80,000 miles amounting to 1.5 million miles of fiber by the 1990s, according to a report published by Kessler Marketing Intelligence.

The three giants, US Sprint, AT&T and MCI, will own and operate three-fourths of that cable. John Kessler, president of KMI Corp., based in Newport, R.I., said that the "shape and capacity of the network will be a major factor in the growth of the metropolitan bypass and subscriber-loop markets."

Eighteen carriers that deploy fiber optics in long-haul networks are analyzed in the $1050 KMI report entitled, "Long-

continued on page 14

Haul Fiberoptic Communications."

The report's projected FO cable in route miles from 1985 through 1989 shows US Sprint in the lead with about 24,000 miles, followed by MCI with 18,000, and AT&T with 17,000 miles.

Kessler says that the carriers are competing over access to national and international highways and to points of presence near major industrial and commercial Fortune 1000 users. They are also maneuvering over mergers, acquisitions and divestitures.

The report makes a strategic assessment of the carriers and includes route maps, present and planned POPs, available services, types of FO systems installed, and a list of the suppliers of FO equipment and cable.

For example, Kessler says that the Williams Telecommunications Group, the fourth largest deployer of FO cable, is departing from the ranks of the regionals and joining that of the national networks. Kessler anticipates acquisitions by Williams Telecommunications, which wants to "position itself as the primary alternative to AT&T for private line users."

Based on DS3 capacity over a 100-mile route, the report concludes that FO cable is the most cost efficient. For instance, nine DS3 lines over copper cost $7 million, while via satellite transmission they cost nearly $15 million. Microwave transmission is just about even with fiber optics at slightly under $5 million. Once capacity moves beyond 10 DS3 lines, however, microwave transmission also becomes more expensive than FO transmission facilities. ◼

Union leaders speak out for telco laws

Charles Mason
Washington Editor

The leaders of the nation's two major unions representing telecommunications workers went to Capitol Hill June 16 seeking legislation aimed at helping laid-off telco employees find work.

"More than 53,000 jobs in the regional holding companies have been eliminated since divestiture. In AT&T, 87,000 jobs have been lost," Communications Workers of America President Morton Bahr told the House telecommunications subcommittee. "There are actions Congress should still take to reassert your role in the development of a national telecommunications policy."

Both Bahr and John Barry, president of the International Brotherhood of Electrical Workers, voiced support for legislation that would require AT&T, the RHCs' operating companies and other RHC subsidiaries to give preferential hiring rights to workers employed in the Bell System at the time of divestiture but who have since been laid off. The preferential system would give those workers first crack at jobs before others could be considered.

There was no testimony offered by industry representatives.

The legislation, which probably will not be voted on this year, has the support of several lawmakers and could be incorporated in any congressional action on the Modified Final Judgment. ◼

Nynex bites into videotex deal

Elizabeth Schultz
Associate Editor

While visitors to the Big Apple's Jacob Javits Convention Center can sink their teeth into their show and the city with the help of a Nynex-developed video information system, Nynex has taken a big bite into videotex with its first major application.

This Bell regional holding company's videotex application has found its way into the Javits facility in six freestanding, interactive kiosks scattered about the convention floor. The kiosks house terminals equipped with keypads to allow visitors to access information about local events, restaurants and transportation schedules. Complete with printers, users get printed copies of directions and coupons displayed on the screen.

This videotex application, explained Jerry Campagno, vice president and general manager of Nynex Computer Services Co., uses IBM PCs and Sony monitors interfaced with a broadband Ethernet local area network that supports data

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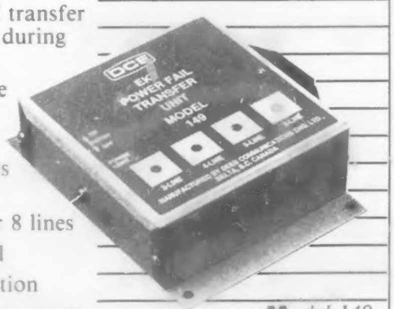

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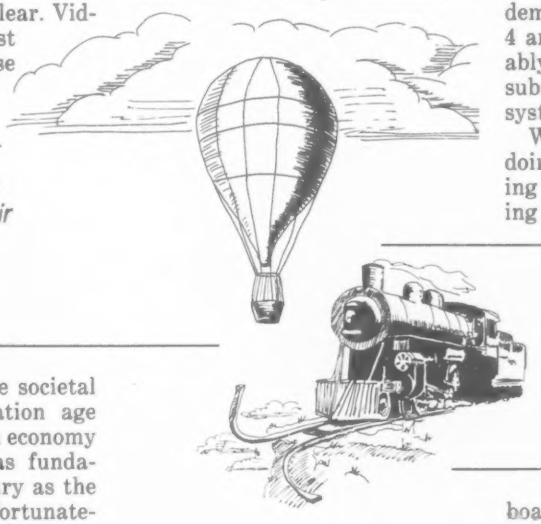
Consumer videotex: the perilous path

ELLIS BOOKER, Features Editor

Discussion about consumer videotex and its prospects for success in this country can conjure conflicting images.

For some, videotex is like a wonderful hot air balloon, finally about to fly free and rise into the clouds. For others, videotex is like an out-of-control train hurtling toward a canyon pass—and the bridge is out.

The stakes are more clear. Videotex could generate vast sums of money for those who deploy mass market, on-line information services. And the societal effect of those information age services on the American economy and culture might be as fundamental in the 21st century as the car was to the 20th. Unfortunately, the operative words here are "could" and "might."



For some, videotex is like a wonderful hot air balloon, finally about to fly free and rise into the clouds.

For others, videotex is like an out-of-control train hurtling toward a canyon pass—and the bridge is out.

Proponents of consumer videotex point out that elsewhere in the world millions of people use on-line information services daily. Gingerly referring to the past failures of videotex in this country, they say the industry has matured and learned valuable lessons about marketing and distribution. And they note that once skeptical lawmakers and regulators have begun to see the need for videotex if the U.S. wishes to compete in the 21st century.

The naysayers say they've heard it all before. They recall past videotex systems (notably those started and quickly folded by Knight-Ridder and Times Mirror) failed to generate consumer interest or demand. They add that the U.S. environment is unique (read *not like France),* not only because there is no single agency dictating the direction in information services, but because America already has pockets of sophisticated on-line information users who probably will not find videotex very enticing.

Current Numbers

According to the seven-year-old Videotex Industry Association Inc., there are 700,00 home subscribers accessing 40 fee-based consumer videotex systems. The VIA also believes there may be as many as 500,000 users of private, usually non-fee bulletin board systems. Accounting for cross-over between these two groups, the VIA estimates there are 960,000 subscribers or households accessing on-line information systems.

In her address to the membership June 14 at a recent meeting in Washington, VIA Chairman Hilary B. Thomas said, "Our vision for videotex by the year 2000 is that 97% of the North American population will have access and 50% will be using videotex on a casual basis."

This is a heady agenda, given the VIA's own figures showing only 1.1% of U.S. households using some form of videotex.

And buried inside this last figure is one of the more discouraging facts about videotex as it now exists, observes Gary Arlen, president of Arlen Communications Inc., a Washington-based market research firm specializing in videotex.

"Twenty-five percent of the people with PCs have modems," Arlen says, noting that this modem-owning population (between 4 and 8 million) is still considerably smaller than the combined subscriber base for all videotex systems.

What are those other modems doing? Arlen thinks many are being used for business telecommuting or access into private bulletin boards. The remainder of PC owners, thinks Arlen, are either uninterested in videotex or don't know these services exist.

To get videotex moving, Arlen continues, "evangelizing is needed." And he thinks this is a role that the nine major North American telephone companies—the seven Bell regional holding companies, GTE and Bell Canada—could play very well.

"They may not be great marketers, but they do have a lot of ways into the household, with bill inserts and advertising," he says.

Which Button?

Before the RHCs or anyone else launches a videotex marketing plan, they will have to identify the market. Most analysts agree that in order to be viable, a videotex service must attract a wide audience, an audience larger than

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the installed base of curious personal computer users and hackers. Moreover, novice users will need a simple way to enter the on-line network and equally simple ways to gather information once they are there. Finally, the service must be priced right and provide services—electronic mail, home banking and shopping, news and so on—that subscribers will use again and again, not explore once and abandon.

At first blush it would seem that the terminal, the device that makes the connection between the videotex services and the paying customers possible, is the easiest component of the problem. The French, for example, created the Minitel, a terminal with the nontechnical user in mind. The Minitel, now deployed in some 3.6 million households in France, features dedicated function keys and a keyboard with an alphabetic, not typewriter QWERTY, keyboard layout.

"I love demonstrating it for children—it's so easy to use," says Paul White, Public Affairs Counsel for U.S. Videotel Inc. The year-and-a-half-old, Houston-based company has exclusive rights to the Minitel technology in the U.S.

Videotel, which markets a modified version of the Minitel terminal manufactured by Alcatel, says it plans to have residential videotex service in three major markets by the end of this year. And White confirms that the company is in "serious" negotiations with at least four of the RHCs. He also hints that a joint marketing agreement with one of these will break before the end of the year.

But others doubt that the French approach is right for this country. "The Minitel experience cannot be generalized here, especially given the modem penetration here," says Francis McInerney, an analyst with Northern Business Information. McInerney echos the criticism of some RHC executives who disparage the Minitel as an old technology.

"To adopt that model is to have failed in the effort to be the world leader in technology," BellSouth Vice President C. Sidney Boren said recently.

In the same breath, Boren stated BellSouth's desire to engage in the design of terminal equipment, a line of business that the RHCs are still restricted from, and to make a "cheap but upgradeable" terminal.

Meanwhile, BellSouth's counterpart to the west, U S West, is at least considering the Minitel-type terminal as one way to go. In late May, the company inked an agreement with Minitel USA, a France Telecom subsidiary, to explore the Minitel videotex concept and look for a test city in this country.

U S West also said it would work to assure compatibility between the French system and terminals and its own gateway.

U.S. VIDEOTEX TRENDS

	1980	'81	'82	'83	'84	'85	'86	'87
Systems (paid)	4	4	11	24	25	33	35	40
Customers	8.2K	43K	91K	176K	382K	568K	800K	1200K

Figures courtesy of Arlen Communications Inc.

Assuming that the RHCs decide the videotex terminal question, what on-line services will subscribers want?

As Arlen puts it: "What hook gets non-computer people in?" Arlen admits that home banking, a service he confesses is a personal favorite, has done abysmally where it has been tried. "Bill paying is a right service ... it just hasn't worked yet," he says. Another natural service, according to Arlen, is what he calls "telegambling," although he acknowledges that such an application opens a legal can of worms.

For analyst McInerney, a serious drawback of videotex—as it is implemented on the Minitel, for example—is that it is "too slow for games." Unfortunately, the one sort of game that Minitel in France does seem to provide in abundance—interactive, adult "chat" lines and electronic mail—will likely draw the same kind of public outrage that today hounds the 976 services industry.

Arlen, too, thinks the U.S. videotex experience will track similarly to the French, where adult services contribute substantially to Minitel's revenues. But Arlen believes that while this application is perhaps necessary, it is not the ultimate future of videotex.

"Think about videocassettes in 1979," he says. "Big studios didn't want to release films for fear of the impact on cable and movie theaters. So the first audience was for porno movies." According to Arlen, once the major studios saw the profits that could be made in the video market, they began to release feature films, thereby making movies on videocassette respectable.

Gateway, This Way

The geography of the videotex industry changed March 7, when U.S. District Judge Harold Greene permitted the RHCs into information services. Greene's order, while stopping short of allowing the companies into providing information content, explicitly supports the notion of gateways, whereby the information services of others could be accessed through Bell operating company public networks.

RHC officials still squirm under the information content restriction. But analysts predict the RHCs will work with what they have. "We believe their strategy is to maximize the usage of their networks," says Gerald L. Mayfield, president of DMW Group. For this reason, Mayfield adds, they will pursue the gateway approach.

Mayfield also repeats a theme brought up by many of the analysts:

"In the end," he says, "this will be a marketing game. The RHCs may not realize how much they need a marketing partner. [Videotex] will require a significant departure from traditional telephone marketing." ■

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Telephony

AN INTERTEC PUBLICATION JULY 18, 1988 INTEGRATING VOICE & DATA COMMUNICATIONS $3

GRAB THE CLASSIFIEDS!

Telephony's 1988 LEC salary survey reveals that there's good money to be made

PRICE CAPS GET CHILLY RECEPTION

Lawmakers say 'wait 'til next year'

FIBER COMES TO PERRYOPOLIS

Bell Atlantic ready to send phone and TV signals over fiber

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Telephony

INTEGRATING VOICE & DATA COMMUNICATIONS

If you don't already work in the local exchange industry, grab the classifieds! As our 1988 salary survey reveals, the LEC industry is a good place to make a living. Cover design by Michael Sonnenfeld. Art by Bruce K. Kerr

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NEWS OF THE WEEK

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In House hearings, lawmakers tell FCC Chairman Dennis Patrick that his price-cap plan should be delayed until next year, when the political climate may have drastically changed

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11 FIBER COMES TO PERRYOPOLIS
Bell Atlantic is ready to send telephone and television signals over the same fiber cable to Perryopolis, Pa., residents, if the FCC OKs the project

FEATURES

30 A TUG OF WAR OVER NETWORK MANAGEMENT
By Michael Warr. Telecom users with large networks have an insatiable appetite for more control and the providers of local and long-distance services say they will continue to give them more of what they want. But just how much control are the RHCs willing to relinquish?

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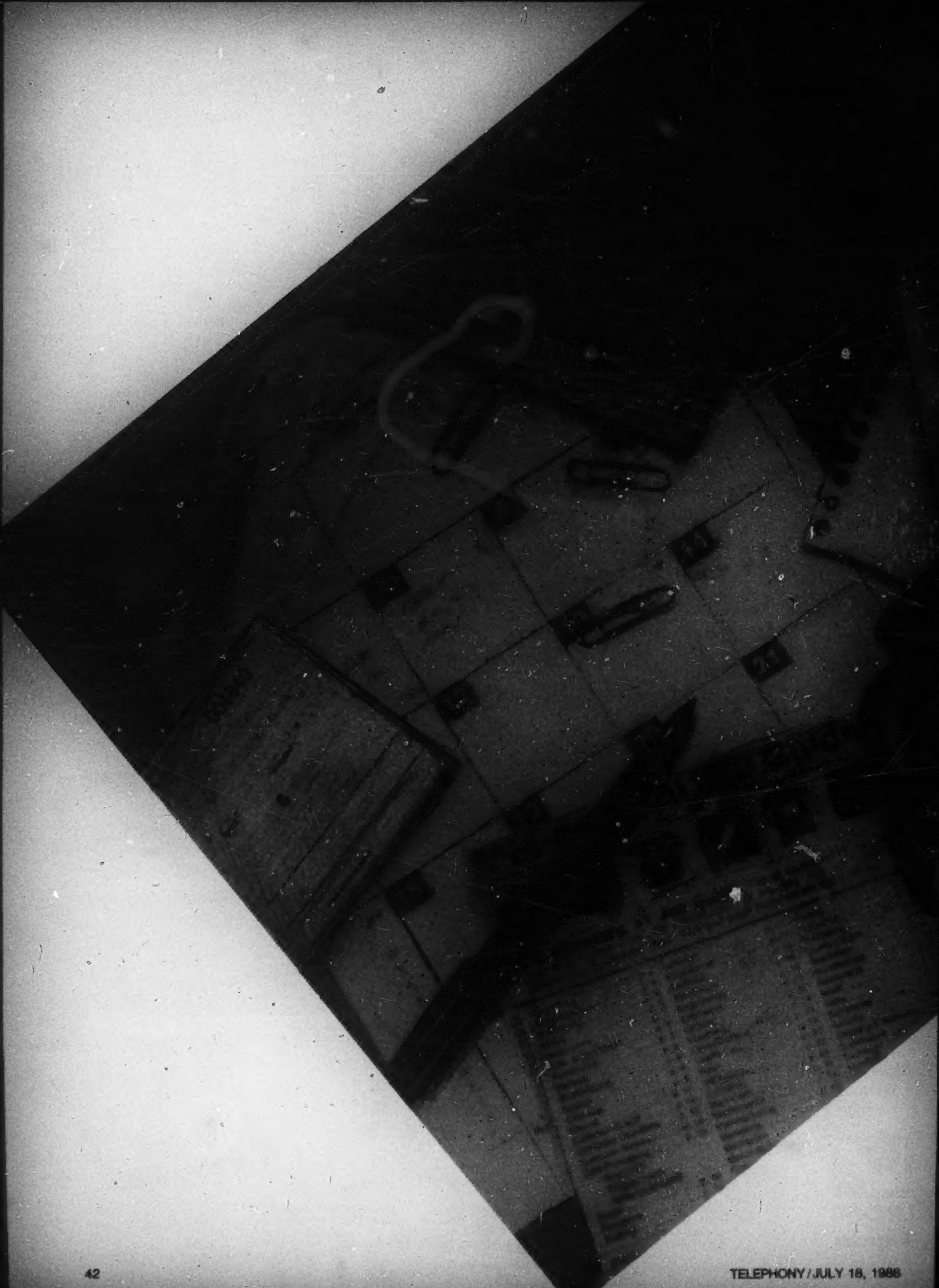

Grab the classifieds!

Telephony's LEC salary survey indicates that the pay is good across the board. But, some LEC managers can even afford champagne and caviar

CZATDANA INAN
Marketing Development and Research Director

LARRY LANNON
Editor

If you don't already work in the local exchange industry, grab the classifieds! As our 1988 salary survey reveals, the LEC industry is a good place to make a living.

Our survey looks at management salaries in both the Independent and Bell segments of the LEC industry. It is based on a nationwide sample of 2000 assistant managers through assistant vice presidents with the sample split evenly among the BOCs and the Independents. Identical and anonymous questionnaires were mailed in mid-May. A month later 402, or 40%, of the BOC managers and 290, or 29%, of the Independent managers had responded.

The survey tracks salary as a function of age, experience, education and gender. Benefits such as vacation time, insurance and other forms of compensation have not been considered. The respondents fall into five levels of management responsibility: assistant managers; managers; district managers; division managers and assistant vice presidents; and direc-

continued on page 44

tors and general managers. Complete survey results are reported in detail in the three tables and six figures on pages 44, 47 and 50.

The overall similarity between the Bell and Independent segments of the industry is striking. While gender is a key factor in earnings potential—90% of our respondents are male—age is not. For instance, 53% of assistant manager respondents, the most junior classification in our survey, are under 45 years of age. Among managers, the next highest level, 51% are under 45 years of age.

Interestingly enough, the importance of gender is most clearly shown in relationship to education, a key determinant of earnings potential in a high-tech industry like telecommunications. The few women in the industry are, by and large, better educated than their male counterparts.

Nearly as striking, however, are the *differences* between the BOC and the Independent segments.

- The Independents, the survey suggests, pay better at the assistant manager level. But Bell managers tend to be better paid overall than Independent managers.
- At the district manager level, where most salaries range between $45,000 and $75,999 annually, the difference is marked. Most Bell district managers earn more than $60,000 annually, while most Independent district managers earn less.
- At the top, consisting of division managers and more senior managers, the survey suggests that the Independents are better paid. No Bell respondent reports earning more than $89,999 per year. However, 2% of Independent respondents say they earn between $90,000 and $104,999 per year.

As we said before, the LEC industry is a good place to earn a living. If you dream of becoming a millionaire, though, you had better play the lottery. ■

Salary Survey Highlights

- 48.1% of all respondents pull down between $45,000 and $59,999 per year.
- A full 60% of Bell company respondents reported that they earn between $45,000 and $59,999 per year.
- Relatively few respondents—only 11.6%—earn more than $60,000 per year.
- A mere 1.5% of respondents earn over $75,000 per year—and most of them are employed by Independent companies.
- Nearly 90% of the respondents are male.

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1988 LEC Salary Survey

FIGURE 1 SALARY DISTRIBUTION BY SECTORS (in thousands of dollars)

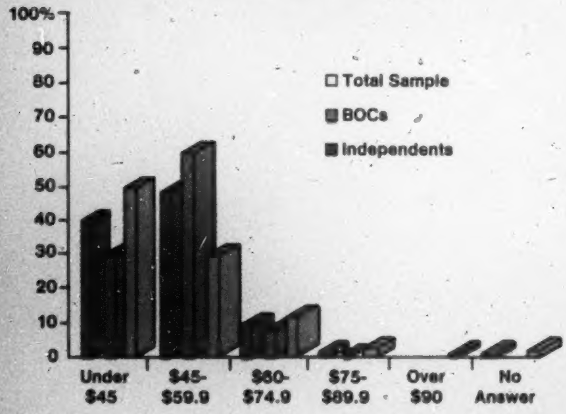


FIGURE 2 PROFILE OF SECTORS BY TITLE

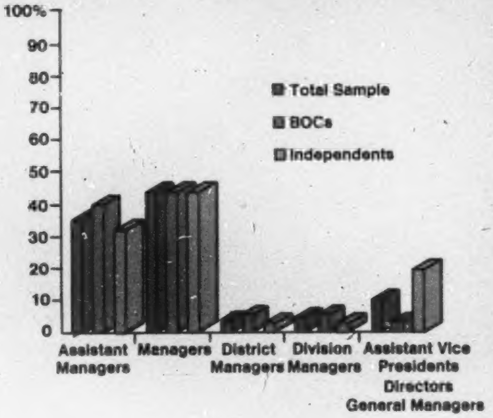
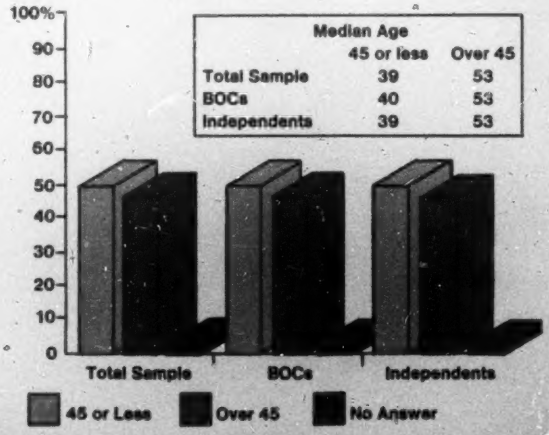


FIGURE 3 PROFILE OF SECTORS BY AGE



Median Age	45 or less	Over 45
Total Sample	39	53
BOCs	40	53
Independents	39	53

1988
LEC Salary Survey

FIGURE 4 TOTAL SAMPLE: GENDER & EDUCATION

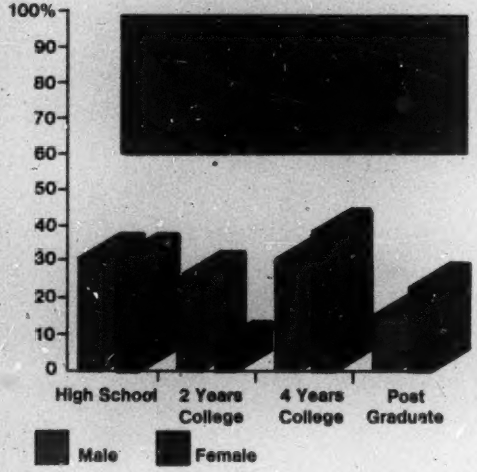


FIGURE 5 BOCs: GENDER & EDUCATION

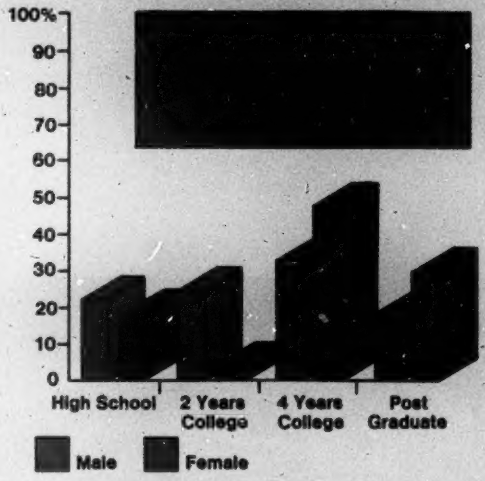


FIGURE 6 INDEPENDENTS: GENDER & EDUCATION

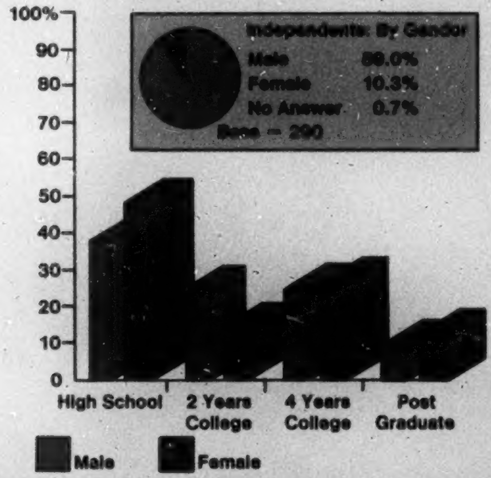
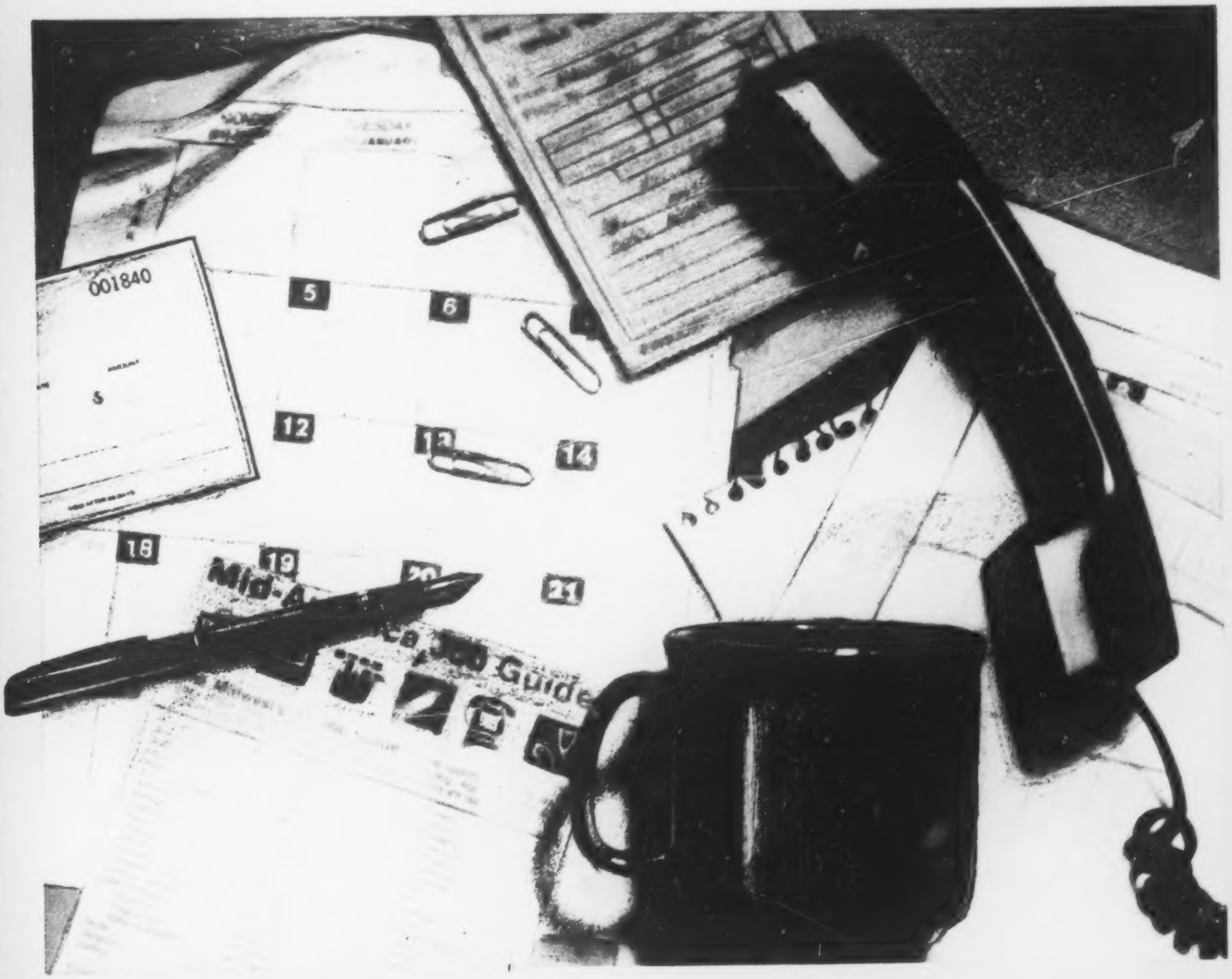


TABLE 3 INDEPENDENTS	Under $45,000	$45,000- $59,999	$60,000- $74,999	$75,000- $89,999	$90,000- $104,999	No Answer	Total Sample
Assistant Managers (N=97)							
Under 45	42%	13%				1%	56%
Over 45	26%	15%					41%
No answer	1%	1%				1%	3%
Managers (N=126)							
Under 45	25%	20%	2%			2%	49%
Over 45	24%	18%	6%	1%			49%
No answer	1%			1%			2%
District Managers (N=8)							
Under 45		25%	13%				38%
Over 45	25%	13%	24%				62%
No answer							0%
Division Managers (N=7)							
Under 45	29%		13%				42%
Over 45		29%					29%
No answer			29%				29%
Assistant Vice Presidents (N=52) **Directors** **General Managers**							
Under 45	19%	10%	15%	4%			48%
Over 45	13%	16%	17%	4%	2%		52%
No answer							0%

7/19/88 C4725-3

Telephony

AN INTERTEC PUBLICATION JULY 18, 1988 INTEGRATING VOICE & DATA COMMUNICATIONS $3



GRAB THE CLASSIFIEDS!

Telephony's 1988 LEC salary survey reveals that there's good money to be made

PRICE CAPS GET CHILLY RECEPTION

Lawmakers say 'wait 'til next year'

FIBER COMES TO PERRYOPOLIS

Bell Atlantic ready to send phone and TV signals over fiber

4B00637********** 5-DIGIT 20814
A20813-----KNNST8000 TTPN
J KENNEDY SRI
CONGRESSIONAL INFORMATION SE
STE 800
4520 EAST-WEST HIGHWAY
BETHESDA MD 20814

MONDAY, JULY 18, 1988 Volume 215, No. 3

Telephony

INTEGRATING VOICE & DATA COMMUNICATIONS

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In House hearings, lawmakers tell FCC Chairman Dennis Patrick that his price-cap plan should be delayed until next year, when the political climate may have drastically changed

10 **NORTHERN BELATEDLY BOOSTS NET CONTROL**
Four years after unveiling a network management product as part of its digital Centrex offering, Northern Telecom has decided to start promoting that product in competition with AT&T's NetPartner

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Bell Atlantic is ready to send telephone and television signals over the same fiber cable to Perryopolis, Pa., residents, if the FCC OKs the project

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If you don't already work in the local exchange industry, grab the classifieds! As our 1988 salary survey reveals, the LEC industry is a good place to make a living. Cover design by Michael Sonnenfeld. Art by Bruce K. Kerr

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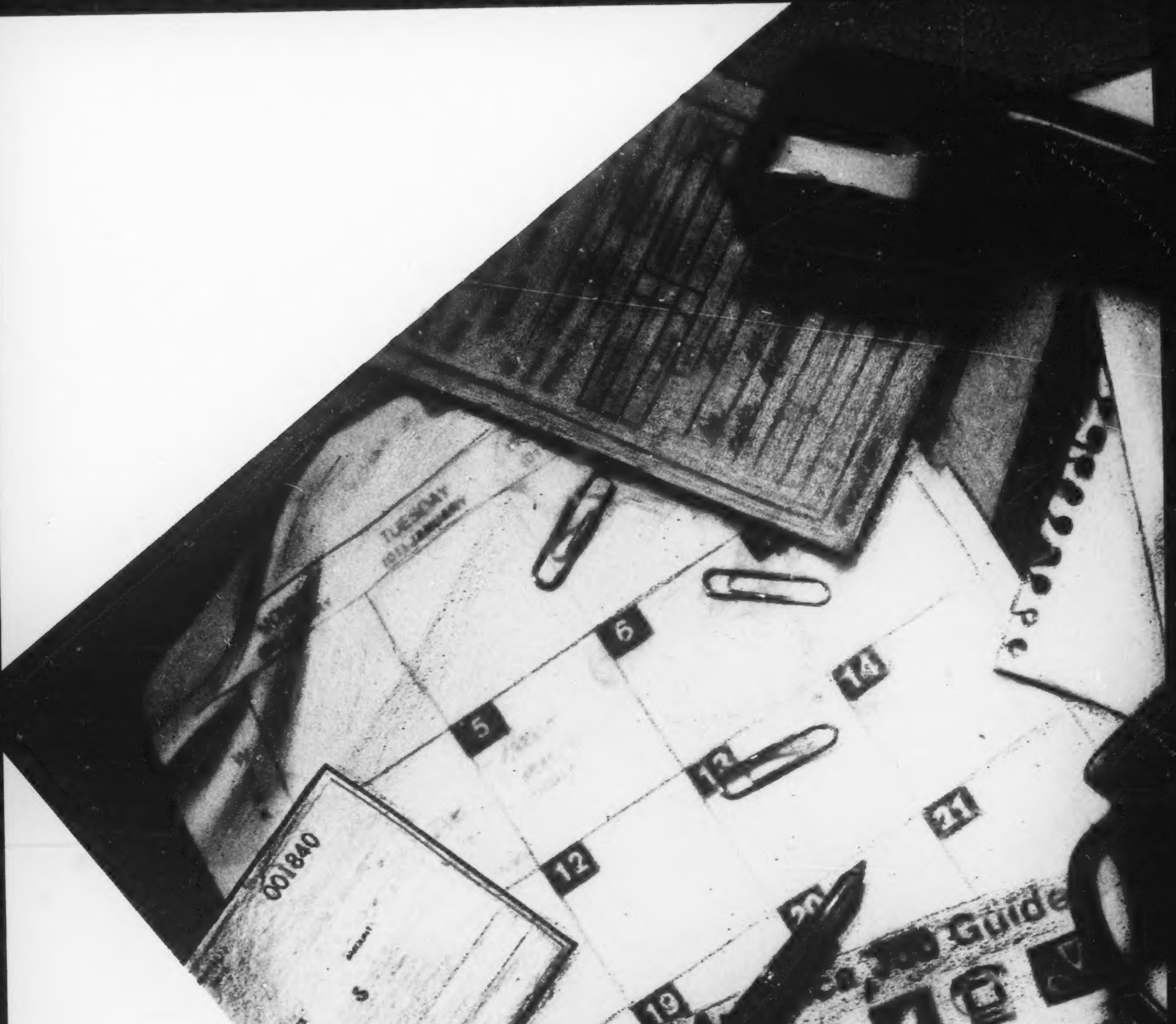
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Job Guide

Grab the classifieds!

Telephony's LEC salary survey indicates that the pay is good across the board. But, some LEC managers can even afford champagne and caviar

CZATDANA INAN
Marketing Development and Research Director

LARRY LANNON
Editor

If you don't already work in the local exchange industry, grab the classifieds! As our 1988 salary survey reveals, the LEC industry is a good place to make a living.

Our survey looks at management salaries in both the Independent and Bell segments of the LEC industry. It is based on a nationwide sample of 2000 assistant managers through assistant vice presidents with the sample split evenly among the BOCs and the Independents. Identical and anonymous questionnaires were mailed in mid-May. A month later 402, or 40%, of the BOC managers and 290, or 29%, of the Independent managers had responded.

The survey tracks salary as a function of age, experience, education and gender. Benefits such as vacation time, insurance and other forms of compensation have not been considered. The respondents fall into five levels of management responsibility: assistant managers; managers; district managers; division managers and assistant vice presidents; and direc-

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Classifieds *continued*

tors and general managers. Complete survey results are reported in detail in the three tables and six figures on pages 44, 47 and 50.

The overall similarity between the Bell and Independent segments of the industry is striking. While gender is a key factor in earnings potential—90% of our respondents are male—age is not. For instance, 53% of assistant manager respondents, the most junior classification in our survey, are under 45 years of age. Among managers, the next highest level, 51% are under 45 years of age.

Interestingly enough, the importance of gender is most clearly shown in relationship to education, a key determinant of earnings potential in a high-tech industry like telecommunications. The few women in the industry are, by and large, better educated than their male counterparts.

Nearly as striking, however, are the *differences* between the BOC and the Independent segments.

- The Independents, the survey suggests, pay better at the assistant manager level. But Bell managers tend to be better paid overall than Independent managers.
- At the district manager level, where most salaries range between $45,000 and $75,999 annually, the difference is marked. Most Bell district managers earn more than $60,000 annually, while most Independent district managers earn less.
- At the top, consisting of division managers and more senior managers, the survey suggests that the Independents are better paid. No Bell respondent reports earning more than $89,999 per year. However, 2% of Independent respondents say they earn between $90,000 and $104,999 per year.

As we said before, the LEC industry is a good place to earn a living. If you dream of becoming a millionaire, though, you had better play the lottery. ■

Salary Survey Highlights

- 48.1% of all respondents pull down between $45,000 and $59,999 per year.
- A full 60% of Bell company respondents reported that they earn between $45,000 and $59,999 per year.
- Relatively few respondents—only 11.6%—earn more than $60,000 per year.
- A mere 1.5% of respondents earn over $75,000 per year—and most of them are employed by Independent companies.
- Nearly 90% of the respondents are male.

TABLE 1 TOTAL SAMPLE		Under $45,000	$45,000-$59,999	$60,000-$74,999	$75,000-$89,999	$90,000-$104,999	No Answer	Total Sample
Assistant Managers (N—255)								
	Under 45	36%	17%					53%
	Over 45	26%	17%					43%
	No answer	2%	2%					4%
Managers (N—301)								
	Under 45	17%	32%	2%				51%
	Over 45	12%	29%	5%	1%			47%
	No answer	1%	1%					2%
District Managers (N—32)								
	Under 45		16%	22%				38%
	Over 45	7%	23%	32%				62%
	No answer							0%
Division Managers (N—37)								
	Under 45	5%	27%	3%				35%
	Over 45		46%	14%				60%
	No answer			5%				5%
Assistant Vice Presidents (N—67) Directors General Managers								
	Under 45	15%	11%	16%	3%			45%
	Over 45	10%	19%	20%	4%	1%		54%
	No answer		1%					1%

TABLE 2 BOCs	Under $45,000	$45,000-$59,999	$60,000-$74,999	$75,000-$89,999	$90,000-$104,999	No Answer	Total Sample
Assistant Managers (N—158)							
Under 45	32%	20%					52%
Over 45	27%	16%	1%				44%
No answer	3%	1%					4%
Managers (N—175)							
Under 45	11%	40%	1%	1%			53%
Over 45	3%	37%	4%				44%
No answer	1%	2%					3%
District Managers (N—24)							
Under 45		13%	25%				38%
Over 45		25%	33%	4%			62%
No answer							0%
Division Managers (N—30)							
Under 45		33%					33%
Over 45		57%	10%				67%
No answer							0%
Assistant Vice Presidents (N—15) Directors General Managers							
Under 45		13%	20%				33%
Over 45		27%	27%	6%			60%
No answer			7%				7%

Classifieds *continued*

1988 LEC Salary Survey

FIGURE 2 PROFILE OF SECTORS BY TITLE

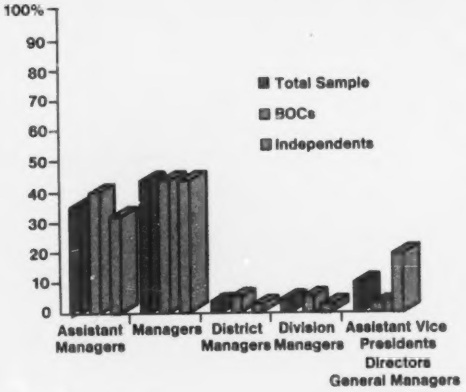


FIGURE 1 SALARY DISTRIBUTION BY SECTORS (in thousands of dollars)

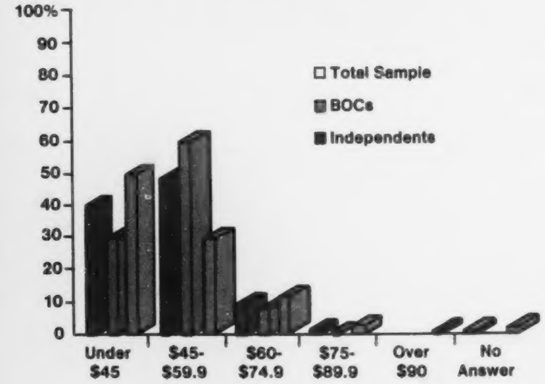
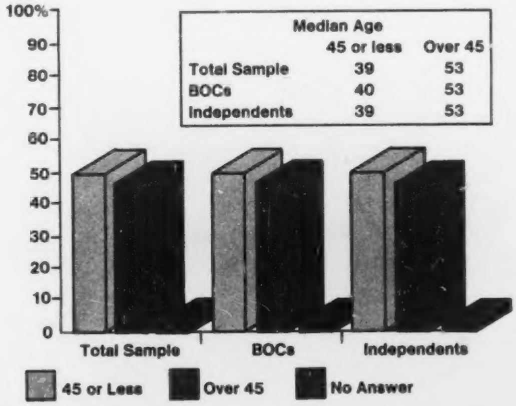


FIGURE 3 PROFILE OF SECTORS BY AGE



Median Age	45 or less	Over 45
Total Sample	39	53
BOCs	40	53
Independents	39	53

1988 LEC Salary Survey

FIGURE 4 TOTAL SAMPLE: GENDER & EDUCATION

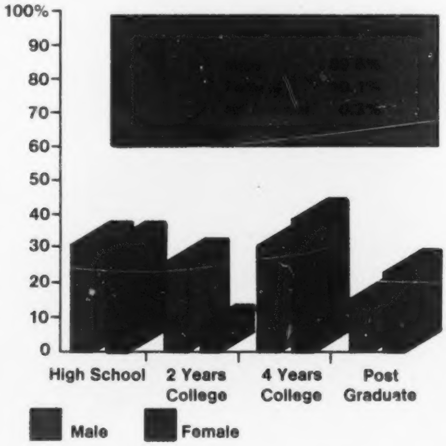


FIGURE 5 BOCs: GENDER & EDUCATION

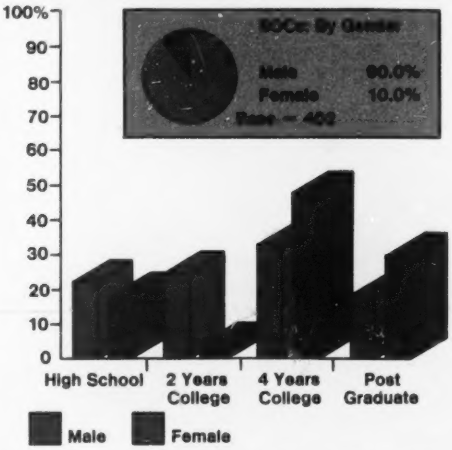


FIGURE 6 INDEPENDENTS: GENDER & EDUCATION

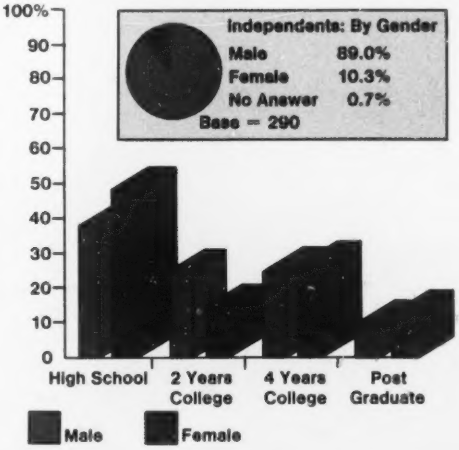


TABLE 3 INDEPENDENTS	Under $45,000	$45,000-$59,999	$60,000-$74,999	$75,000-$89,999	$90,000-$104,999	No Answer	Total Sample
Assistant Managers (N=97)							
Under 45	42%	13%				1%	56%
Over 45	26%	15%					41%
No answer	1%	1%				1%	3%
Managers (N=126)							
Under 45	25%	20%	2%			2%	49%
Over 45	24%	18%	6%	1%			49%
No answer	1%			1%			2%
District Managers (N=8)							
Under 45		25%	13%				38%
Over 45	25%	13%	24%				62%
No answer							0%
Division Managers (N=7)							
Under 45	29%		13%				42%
Over 45		29%					29%
No answer			29%				29%
Assistant Vice Presidents (N=52) **Directors** **General Managers**							
Under 45	19%	10%	15%	4%			48%
Over 45	13%	16%	17%	4%	2%		52%
No answer							0%

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Telephony

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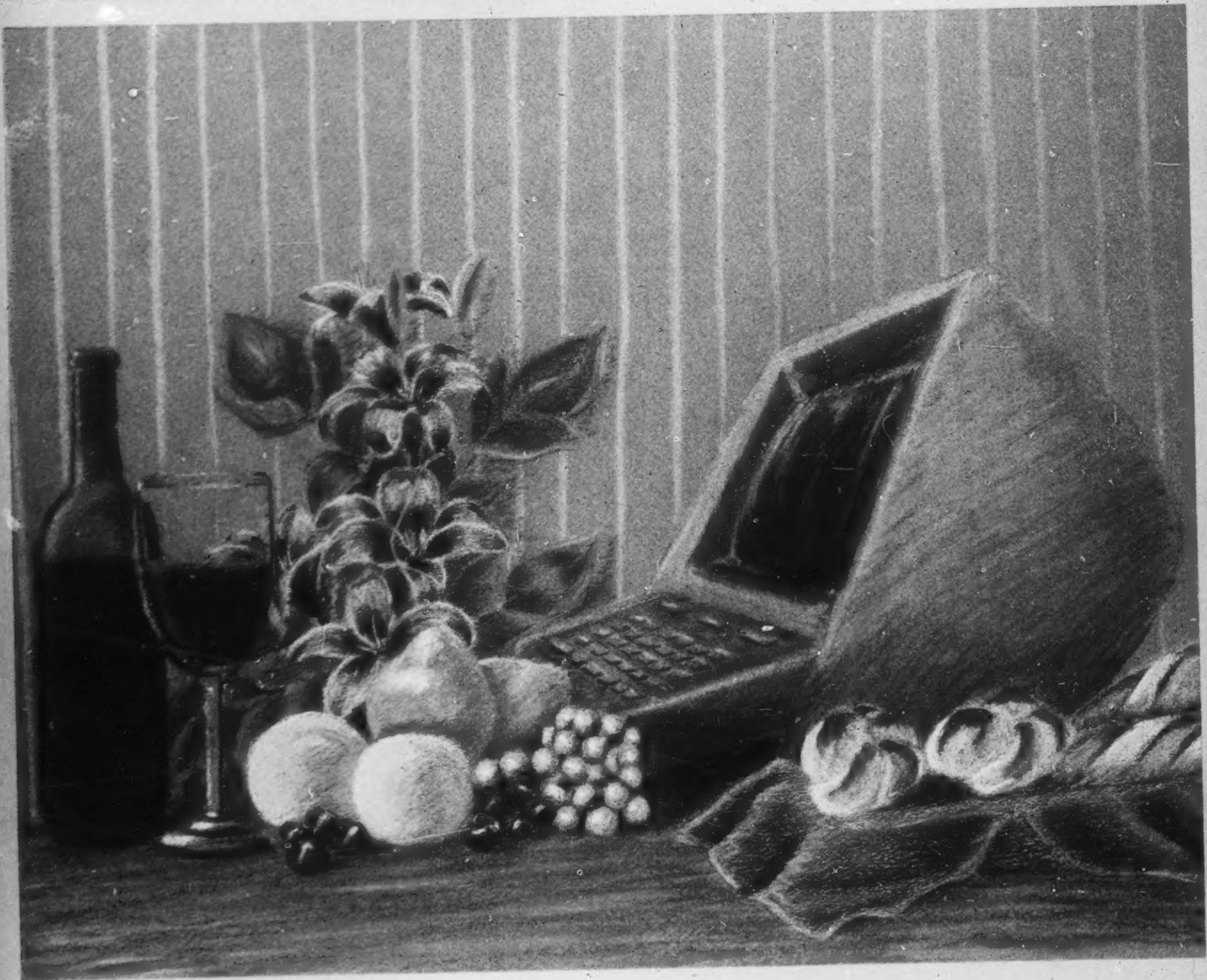

VIVE LE MINITEL

After six years of successful operation, France's Teletel videotex system is still going strong

PATRICK PLEDGES SMALL TELCO PROTECTION

Under Senate pressure, he says price-cap plan will have safeguards

PAC BELL, DEC BEGIN MESSAGING TRIALS

User groups will test X.400 service this fall

480062********* 5-DIGIT 20814
A20813----KNNST8000 11PN
J KENNEDY SRI
CONGRESSIONAL INFORMATION SE
STE 800
4520 EASTWEST HIGHWAY
BETHESDA MD 20814

MONDAY, AUGUST 8, 1988 Volume 215, No. 6

Telephony

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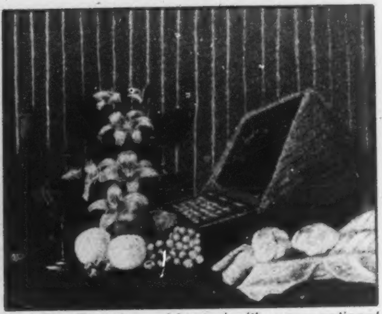

The French are blessed with many national treasures: unmatched impressionist painters, world-renowned cuisine, wine, and now, a distinctly 21st century item, mass market videotex. Cover art by Karen Dunaitis

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Under pressure at a Senate price-cap hearing, the FCC chairman promises specific safeguards for small companies in any price-cap plan his agency might approve

10 **FTS 2000 DELAY LEAVES BIDDERS BITTER**
The GSA says it needs more time to evaluate technical data, but the three companies competing for the contract are disappointed by the latest delay

11 **PAC BELL, DEC BEGIN MESSAGING TRIALS**
The X.400 electronic messaging technology they unveiled this spring will be tested by four user groups, beginning this fall

12 **BT BUYS U.S. DIRECTORY SYSTEMS**
Using a Computer Consoles Inc. system, the British carrier will provide direct electronic access for customers to its directory database

14 **BARNES ASSAILS ONA CRITICS**
Outgoing Southwestern Bell chairman tells New York analysts that ONA foes are trying to keep the RHCs under court-ordered restrictions by preventing the opening of the local exchange bottleneck

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By Ron Hornbrook. Survival of the fittest is a constant question for Edmonton's outside cable plant, which regularly faces the wrath of nature in the form of freezing temperatures, snowstorms and floods

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By Ellis Booker. *Telephony* traveled to Paris in June to get a firsthand look at France's Teletel videotex system—the world's most mature example of a mass market, on-line information network

34 **ACDs: AN OPERATOR'S ALLY**
By Nancy Pryor. Automatic call distributors are gaining in sophistication as call center managers demand it for handling incoming calls and a wide variety of management reporting information

40 **LET AN AUTODIALER DO THE 'WALKING'**
By James F. Mitchell. Autodialers are the automatic call distributors of outbound calling. They distribute calls automatically and give your fingers a rest

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Vive le Minitel

Now in its sixth year, France's Teletel videotex system is the world's most mature example of a mass market, on-line information network. Telephony *traveled to Paris in June to see Minitel in action*

ELLIS BOOKER, Features Editor

The French are blessed with many national treasures: unmatched impressionist painters, world-renowned cuisine and, of course, wine.

But now the French are adding another, distinctly 21st century item to this list—mass market videotex. And although it remains to be seen whether other countries will be able to import this seed, the French experience does suggest how mass market videotex could flower in other soils.

A visitor to Paris need not look far for evidence of the videotex revolution. Ride the excellent Paris Metro and you will see advertisements everywhere for one of the most conspicuous, popular and controversial of the Teletel services, the adult-oriented chat lines and bulletin boards known as the *messageries rose.* "Natasha 36 15" reads a purple poster with black lettering affixed to the wall at the entrance to one Metro stop.

Less obvious, however, is the daily impact that the 3.7 million Minitel terminals installed since 1982 throughout France are having on the way French citizens live and work. Through their Minitels, these users can search for phone numbers and addresses (and soon will be able to send electronic mail to one another), order food or theater tickets, do on-line banking or check a train schedule. And these applications overlay many business-to-business services not available to the general public.

Officials of the state-run telephone company, France Telecom, are proud of Minitel's uses, both practical and frivolous. They also insist that the French formula—simple-to-use and inexpensive terminals, a convenient billing arrangement and a basically hands-off attitude toward the type of information carried over the public network—is the reason for Minitel's success, and could serve as a model for other countries.

"First, there is no demand for videotex," says Jean-Paul Maury, program director, Teletel. "It is necessary to show to the user that they will have some advantages. The first problem is to have low cost, and it's necessary to have a system that is easy to use because [users] will not make an effort."

Maury adds that videotex must offer services that are unique, that "are not in competition with paper." For example, the electronic directory service, which is the workhorse of the Teletel network, began with "local information" only. The service became popular, however, when it began offering national coverage and multiple search options. Currently the directory enables users to search by name, heading (such as "Doctor") and street name, as well as emergency number, postal code, national tariff and France Telecom administrative information.

Making sure that Teletel services are "not in competition" with traditional forms of paper services goes deeper, however. Early on, France Telecom came to an accord with the French publishing industry and made two important concessions. First, advertisements on EDS could only be updated on a weekly or monthly schedule, making them less timely than classified ads in newspapers. Second, media companies were given the exclusive crack at being information vendors. Finally, to encourage use of the EDS, paper directories, although available to Minitel recipients, were no longer free. This carrot-and-stick approach has apparently worked.

Maury says that France Telecom will exceed its earlier goal of 5 million Minitels in 1990 and will have 6 million units installed by 1990. In addition, he confirms that the no-charge program will end next year, at which point all Minitels will be rented to subscribers for a small fee.

The most significant short-term enhancement that will be made to the basic Teletel system will be electronic mailboxes, tied to the electronic directory. According to Maury, this service will begin at the end of this year. "It will be a usage charge," he says. "We will not ask for rent of the box." (Many existing Teletel information service providers already offer E-mail within their own applications.)

The second enhancement, due to begin in earnest next year, is the addition of Lecam (for *lecteur de carte a memoire*) "smart card" readers. Now a peripheral device to the Minitel terminal, and rented to subscribers for about FF50 ($7.94) a month, Maury says the Lecam will be incorporated into the standard Minitel terminal next year. Paying for goods and services is more convenient and secure with a Lecam system, he says. In addition, in some applications the cards can automate network log-on and identification procedures.

One of the more interesting future products Maury shows his visitors is a portable Minitel terminal that can be connected to a car phone or a standard jack. The prototype, which has a liquid crystal display and some local intelligence, can run off a car battery or an ac line and "will be in big demand," he predicts.

Even so, the standard Minitel 1 has been criticized for its lack of local intelligence and memory storage. Indeed, the 1B supplanted the first Minitel terminal, the Minitel 1, which used a non-standard keyboard, supported only the Teletel (CEPT Profile 2) protocol and had an alphamosaic screen display of 25 rows by 40 characters. The Minitel 1B, the basic model since mid-1986, is a "dual-standard" terminal that supports both the Teletel standard and the 80-column ASCII standard.

Maury admits that the first design was a mistake: "It was not compatible with what was existing [internationally], and so it slowed delivery," he says. But like others within France Telecom, Maury is quick to defend the Minitel and its simplicity. "The PC is too complicated, too expensive," he says. In fact, users requiring PC features can buy a Minitel 1200/75-b/s (V.23) reversible modem board for a PC and one of dozens of suitable software packages. France Telecom could not provide figures on the number of users employing PC emulation, however.

Maury also dismisses critics who have said the Minitel's 1200-b/s speed is too slow. "There is a lot to imagine first with text. . . . It's necessary to begin with something, and it is a mistake to start too high," he says. He argues that text-based services will remain popular even in the age of ISDN. "In a book you have a lot of characters and few figures. But books still sell," Maury observes. France Telecom has a stated goal of making ISDN available on a national basis by 1990.

Growth Figures

The "selling of Minitel," to judge from France Telecom's own figures, is undeniable. As of last December, the penetration rate of Minitel in relation to the number of subscribers was 13.6%, with 19.5% of the population over age 15 enjoying access to Minitel. In fact, 1987 was an important year for Teletel from both a technological and marketing standpoint.

During 1987, 1.1 million Minitels were installed in France, a 51% increase in one year. The number of calls to the various Teletel information services increased to 513.8 million in 1987, up from 104 million in 1985. Likewise, the number of hours on the system grew from 11.7 million in 1985 to 52.4 million last year. Leading this growth was EDS, which logged 300 million calls during 1987, or an average of 24.5 million calls per month. Accessed through the network address "11," EDS accounted for 33% of all the calls over the Teletel network in 1987 (Figure 1). By comparison, directory assistance logged less than 200 million calls in the same period.

To handle this increased traffic, France Telecom added over 10,000 access ports to its Teletel network between 1986 and 1987, reaching 43,160 ports as of last December. Last year, Teletel traffic represented 53% of the annual volume billed on France Telecom's Transpac packet network.

And to make the selection of on-line services easier (at last estimate there were 8000 information services on the Teletel network) France Telecom launched last year another on-line directory—the Minitel Services Guide.

Although traffic figures show impressive growth, Minitel use is less spectacular. According to France Telecom figures, the average number of monthly calls per Minitel grew from 13.5 in 1986 to just 15.2 in 1987. And the average duration of these calls actually fell from 6.3 to 6.1 minutes per call.

In explaining the drop in call duration, France Telecom cites the "leveling off" of the messaging services and the fact that shorter calls may indicate users are becoming more familiar with the information services, and so spend less time on-line navigating through the network and its services.

Any discussion of the messaging services in France must touch the subject of pornographic services. One source familiar with the Teletel network said these services accounted for 50% of the Teletel traffic in 1986. Officially, however, France Telecom

continued on page 26

officials will say these services account for 10% to 20% of the traffic and are declining. In fairness, France Telecom cannot know the exact traffic contribution of these or any other kiosk-based services. Nevertheless, in response to public and government concerns, France Telecom implemented rules on chat lines last year. Service providers must monitor "open" lines, either automatically or with operators, and can terminate obscene calls.

In essence, the Teletel network consists of the voice network, videotex access points and Transpac, France's X.25 packet network. The VAPs, which are based on Alcatel E10 digital switches, are hooked to Transpac via 9.6-kb/s and 48-kb/s links. Figure 2 shows the Teletel network and its components.

Rates, Kiosk Billing

France Telecom significantly expanded the billing options for Minitel services in 1987. It added three new telephone access numbers for business users, including an 800-type "Green Number" (36 05 XX XX), paid for by the service provider and free to users. Even more significant, two "kiosk" numbers were added in the middle of the year: Teletel 3P (36 16) and Teletel 4 (36 17).

Inaugurated with Teletel 3 in 1986, kiosk billing is frequently heralded by France Telecom officials as a key element to Minitel's acceptance and growth, and to the number of services now available on the Teletel network.

Kiosk billing works as follows: Once a user is connected to the kiosk service—either by typing the service's mnemonic, three-letter code or its eight-digit address—the VAP transmits metering pulsed to increment the charge meter at the user's local telephone exchange. Each pulse corresponds to one phone unit fee on the user's telephone bill; the pulse rate can be adjusted so that the price of the call covers service use and communication costs.

Significantly, no presubscription is required to access kiosk services. Or, as one observer puts it, "The particularity of the French system is you can have a fantastic amount of services and [users can] stay five minutes, two minutes, one minute. If you had to subscribe to each service you would lose a great part of these calls."

And because the user's monthly phone bill is the conduit for the kiosk charges, an element of financial risk that might impede small information providers is removed.

Bolstered by the success of Minitel at home, France Telecom is now looking for opportunities elsewhere—specifically in the U.S. and Western Europe. Intelmatique S.A., created in July 1987, is the company responsible for these moves. It is 100% owned by three subsidiaries of Cogecom, France Telecom's holding company. The three partners are France Cables et Radio with 56%, Telesystemes with 10% and Transpac with 34%.

The corporate evolution of Intelmatique is indicative of France Telecom's objectives. The original entity was a France Cables et Radio subsidiary that primarily publicized Minitel at international trade shows but "without specific research on the business opportunities," says Intelmatique's President Director General Alain Profit.

Intelmatique's current operational goals are summarized in its official literature this way:

- consultancy services in marketing, software and engineering for the development of videotex abroad;
- participation in shareholdings of significant size in companies operating abroad on behalf of France Telecom; and
- development of international videotex traffic.

With its staff of 25 in Paris and five in New York, Intelmatique also operates and distributes MinitelNET, a service that allows users in other countries to access most services on Teletel over local X.25 networks.

Intelmatique's most important agreement this year was with U S West *(Telephony, May 30, page 14)*. Profit explains the nature of the technology-sharing agreement, the first with a Bell regional holding company, this way, "I think people in your business are looking for figures. . . . We didn't try to

continued on page 30

FIGURE 1 ESTIMATED USAGE

sell any particular piece of equipment or software to U S West. But this agreement is quite important. It states that U S West has decided to move strongly into videotex and profit from our experience. It states that they are committed to supporting the French protocols and standards for the network and the terminal, though not on an exclusive basis."

Profit goes on to say that the two companies will undertake a study of videotex and its potential in U S West's 14-state territory. If U S West decides to proceed, Profit says, "They are committed to offer us participation in that venture—technical assistance and, if they wish, some monetary investment."

Profit reports that Intelmatique has been in discussion with Nynex, Ameritech, Pacific Telesis and Bell Atlantic. He says Southwestern Bell is not a target at the moment because of its ongoing relationship with U.S. Videotel Inc., a two-year-old startup offering videotex in Texas. The remaining RHC, BellSouth, is "a different situation," Profit says. "Quite a few times they mention Minitel as the wrong solution, so it's difficult to go to them and say they are wrong," he explains. But he adds, diplomatically, that Intelmatique is not rejecting a venture with BellSouth.

In his role as Minitel's goodwill ambassador, Profit also rejects the assertion, made by some critics of the Minitel in the U.S., that the French videotex experience has little relevance for the market here.

"If you refer to the size of any RHC, it's about the size of France Telecom. The number of subscribers [in an RHC] is about 15 million—we have about 23 million in France. So the comparison can be made, really."

He also sees parallels in the regulatory environment. "[In the U.S.] you have a strong separation between the Bell companies that offer the network and the information providers. . . . But the situation is exactly the same in France. France Telecom offers transport, and the information providers are outside France Telecom."

Along with its U.S. ventures, Intelmatique is laying the groundwork for Teletel in Europe. Perhaps the most important of these gains occurred Nov. 12, 1987, when the Deutsche Bundespost authorized the connection of Minitel 1B terminals manufactured by Telic-Alcatel to its PSTN. Formerly, Minitels could only be attached to private data networks. The agreement also allows the attachment of West German terminals to the French PSTN. A similar agreement exists between France and the U.K.

In all, around 30 countries have approved Minitel attachment to their national networks. The amount of international traffic is still modest—around 500 hours per month—but Profit hopes this number will grow to 1000 hours by year's end.

However, as Profit points out, the authorization does not indicate that the Bundespost plans to trash its own Bildschirmtext, or BTX, videotex service. Rather, Profit says, "BTX is really the right standard to professional services but not for the consumer—they need something simpler and cheaper." A gateway service for BTX-to-Teletel was recently unveiled, so that German users can access Teletel services through the gateway, the international telephone network, an X.3 PAD of Datex-P (the German X.25 packet network), or the Interpac Teletel VAP in Frankfurt.

The story for Intelmatique and France Telecom in Canada is far less cheerful. Bell Canada's Alex videotex system, announced late last year, will debut in Montreal in December. Yet the Alex terminal, which is being manufactured by Canada's Northern Telecom, is incompatible with the Minitel, despite what Profit describes as Intelmatique's efforts. "We would have liked to, maybe not merge, but to have a joint operation of Alex and Minitel," Profit says. He adds that Bell Canada was contacted a few times about this possibility, the only condition being that the Minitel could be used in the Canadian system.

"Why didn't France Telecom order 100,000 or 300,000 terminals from Northern? Had we done that, Alex might not have been made incompatible. I think it could have been a solution," he concedes.

Whether because of this international competition

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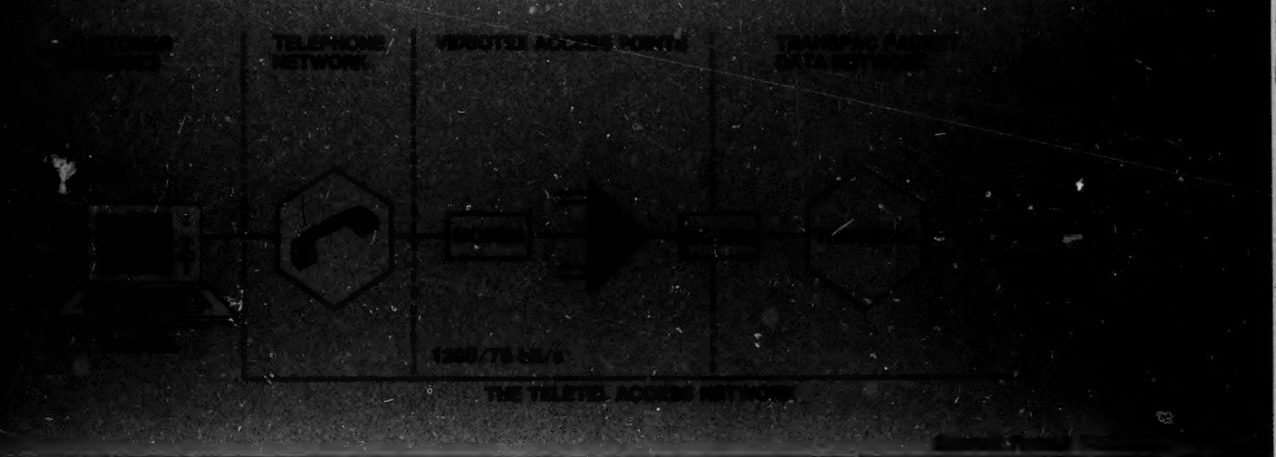
FIGURE 2
TELETEL ACCESS NETWORK



or despite it, the Minitel continues to evolve. Currently, there are several types of Minitels accessing the Teletel network, excluding the Minitel 1.

In addition to the Minitel 1B, there is a Minitel with a built-in electronic keyset, a Minitel containing videotex answering machine functions and automatic dialing, and a Minitel with a color screen. Three French manufacturers produce the Minitel terminals. They are Telic-Alcatel; RTIC, a Philips subsidiary; and Matra. These vendors have market shares of approximately 60%, 30% and 10%, respectively.

1992 Deadline

There is a drumbeat in Europe these days that a visitor can hear underneath most conversations about business. It is summed up by a single date—1992. By the end of that year, according to the European Commission's plan, there will be a unified market for its 12 member nations.

The merits of the plan and its chances for meeting its 1992 deadline aside, it is clear that telecommunications and Pan-European videotex services could be an important engine in this new structure. Already there are cross-European applications of the French Teletel system (see story below).

However, the French political environment may work against the 1992 deadline. Some observers note that with the Socialist win during the recent national election the pace of liberalisation may slow.

"In Europe, France will remain the only country, except Luxembourg, with no split [between regulatory and operational functions]. Even for a socialist government that is a major issue," says Michael Feneyol, a member of France Telecom's task force on the evolution of telecommunications in France. Other observers contend that, although the pace of liberalization in France may slow under the socialists, it cannot—and will not—halt.

Still, the Teletel network and the Minitel terminal are no longer a novelty, and to that extent, France is ahead of its EEC partners.

Perhaps even more important, the information providers within France are learning valuable lessons about marketing. Indeed, some say that after three years they are ready to start selling this expertise to others. It is these information vendors, more than the network they use, that will be important in 1992 and beyond. ■

Road guides to raisins

There are an estimated 8000 information services available today on France's Teletel videotex network. And, as the examples below indicate, they answer a wide spectrum of business and residential needs.

Lamy S.A. was a 100-year-old publishing house specializing in European business and transportation law before it began its first videotex product in 1985. Sylvie Girard, director, Departement Telematique, explains that Lamy became interested after learning that a competitor was about to launch a videotex product.

Girard says the reaction to Teletro (the on-line version of Lamy's TRO road tariff regulation guide) varied, according to the customer. "Small companies understood it quickly and signed contracts," she says. "Bigger companies were reluctant because it would eliminate in-house staffs [that were needed to collate the information contained in the paper directory], and they couldn't tell how much this would cost."

According to Girard, new Lamy products, especially videotex ones, will contribute FF33 million ($5.2 million) to the company's bottom line this year, almost double the 1987 figure. Lamy's Teleroute service, begun in 1986, includes a directory of tertiary industries for hiring industrial vehicles; a job database for the transportation market; a news wire; a dangerous-goods database; the on-line exchange system for connecting shippers and truckers, information on storage and distribution throughout Europe; and electronic mail. The service may have as many as 50,000 users, says Girard. Teleroute has been available in Belgium since 1986 and the Netherlands and the U.K. since 1987. Lamy hopes to add Spain and West Germany to the list this year.

Epitomizing the attitude of other videotex information providers, Girard says that to stay in front, a videotex service must continually improve. "There's a feeling you always must offer new services, even ahead of market demand," she says.

If Lamy's Teleroute is an example of a vertical market product, then Telemarket's on-line supermarket services demonstrate a service with enormous, mass consumer possibilities.

Telemarket's marketing manager is Marie Marchand. She speaks eloquently about home shopping and how this three-year-old industry has evolved. And no wonder. At the time *Telephony* interviewed her, Marchand had been with Telemarket for just a month, having left France Telecom after seven years of service. While at the PTT, she directed the group that evaluated the commercial potential of new services. Just before entering the private sector, she wrote a book on Teletel, entitled "A French Success Story: The Minitel Saga."

"When you have written books and papers saying that money can be made on [videotex], you just want to see if you can do it," she explains.

Telemarket's two *supermarche* services have 8000 regular customers who order from two catalogs. The catalogs—one with 1900 items, the other 1000—contain everything a household could need, from wine and beef to cleaning supplies and pet food. (Users can also search for items on-line, although this is an expensive option.) Orders are processed within 24 hours and delivered during one of two delivery periods during the day. The premium for this convenience is that goods are about 10% more expensive than Paris prices, or 15% to 20% higher than the prices outside Paris. Payment is made on delivery with credit card or check, and Telemarket is also trying the Lecam "smart card" system for on-line payment. Consumers can also order goods over the telephone.

Like Lamy's Girard, Marchand explains the challenges of being a vendor on videotex. "Our population is very specific, very small and very well-defined," she says, adding that this makes advertising difficult. Among the innovations Telemarket is now trying is to allow customers to enter the *supermarche* via other information services, such as the popular on-line news services offered by Le Monde and Cosmo. In exchange for serving as a gateway, these services keep the traffic as their own, and Marchand says negotiations are under way to give these gateway providers a portion of the revenues.

On the delivery end, Telemarket is trying novel approaches as well, such as leaving the food order in one of two gas stations in Paris for pick-up by the customer. And the videotex interface itself is continually being improved. On-line help is available, and the service can "remember" a customer's last order, which can be modified quickly during the customer's next time on-line.

But the lifespan of an innovation in the videotex world is short-lived, according to Marchand.

"New on the Minitel is short. [A new way of displaying a screen or a method of navigating a service] is new for two or three days or weeks, and then everyone is using it," she says.

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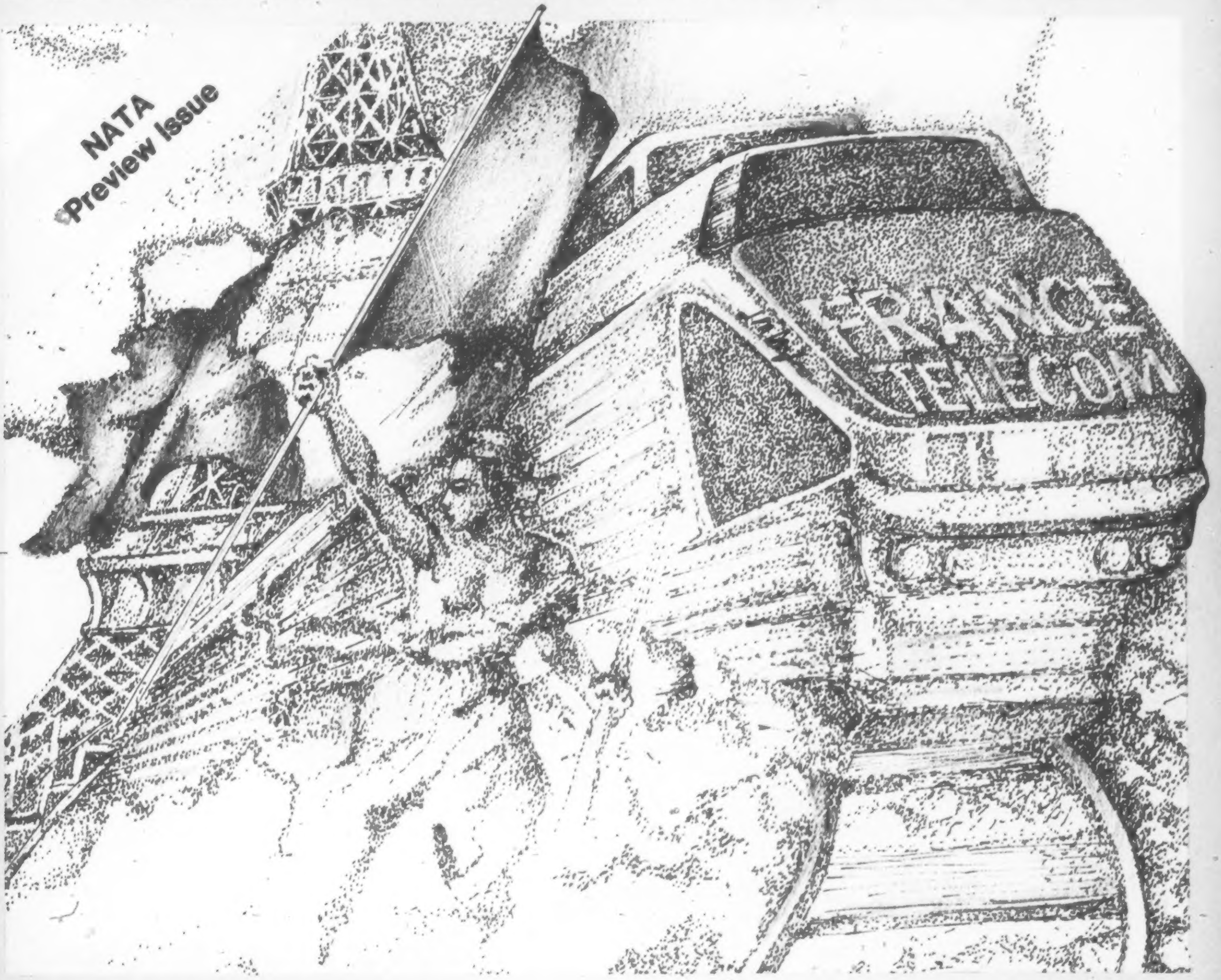

FRANCE TELECOM MOVES AHEAD

Uncertain regulatory territory cannot stop this aggressive PTT

PAC BELL PURSUES VISION OF THE '90s

Challenges vendors for help in reaching Netsys concept

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Orders sweeping changes in their use

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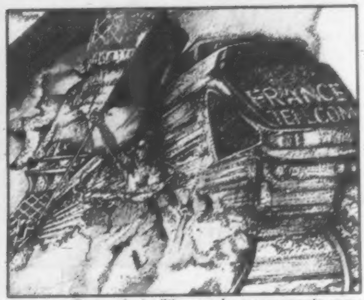

France's politics and governments may change, but its telecommunications policies follow a fast track to the 21st century.
Cover art by Laura Doyle

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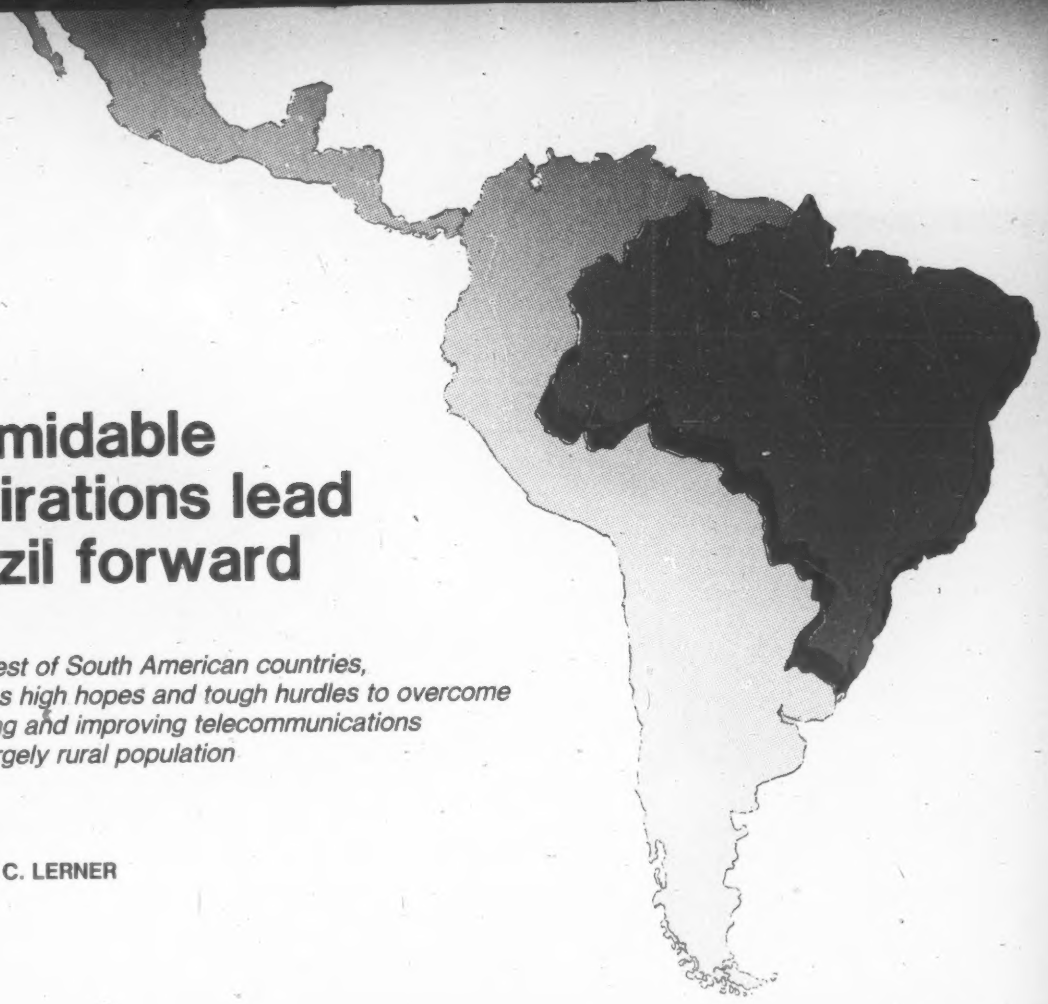

Formidable aspirations lead Brazil forward

The largest of South American countries, Brazil has high hopes and tough hurdles to overcome in bringing and improving telecommunications for its largely rural population

NORMAN C. LERNER

Brazil, the largest country in South America, is about the same size as the United States. Its telecommunications community has the same aspirations for change and improvement as those in the U.S. But that is where the similarity ends.

Most of Brazil's population is concentrated along the coast. Except for a half-dozen or so large cities, an inordinately large proportion of the country is rural. Income and economic development drop rapidly outside the major Brazilian cities.

Nevertheless, Brazilian aspirations for a comprehensive telecommunications system cover the spectrum: from advanced and enhanced services in the major cities to basic telephony in rural areas.

Why is this mammoth country, the most economically, and perhaps the most industrialized of all developing countries in Latin America, suffering the same telecommunications development maladies that afflict other developing countries? And can the hoped-for changes in Brazil's telecommunications infrastructure be achieved?

Irregular Growth

Telecom services in Brazil have improved steadily over the last 20 years. The typical deficiencies of a developing country have been gradually disappearing. By the early 1970s, a modestly acceptable level of service was reached.

In 1970, 2 million telephones served a population of 90 million. This increased last year to 13.5 million telephones serving 141 million people. Brazil now has one of the 15 largest telephone networks in the world; it ranks 36th in the world in telephone density, with 8.6 per 100 people, up from two per 100 in 1970. This appreciable improvement still leaves Brazil with less service for the population than some of its other Latin American neighbors, including Mexico, Venezuela, Colombia and Uruguay.

Still, remarkable improvements have occurred in a relatively short time. Brazil's growth rate has been higher than most of Latin America, pushed by a fluctuating but generally upward industrial growth.

Calling patterns reflect this growth. Domestic long-distance calls increased from 3 million in 1969 to more than 450 million in 1987; telex subscribers increased from 2000 to 93,000 in the last 15 years, and it is now possible to dial direct to any Brazilian city.

There has been comparable improvement in the international area due to satellite and submarine cable, which were non-existent

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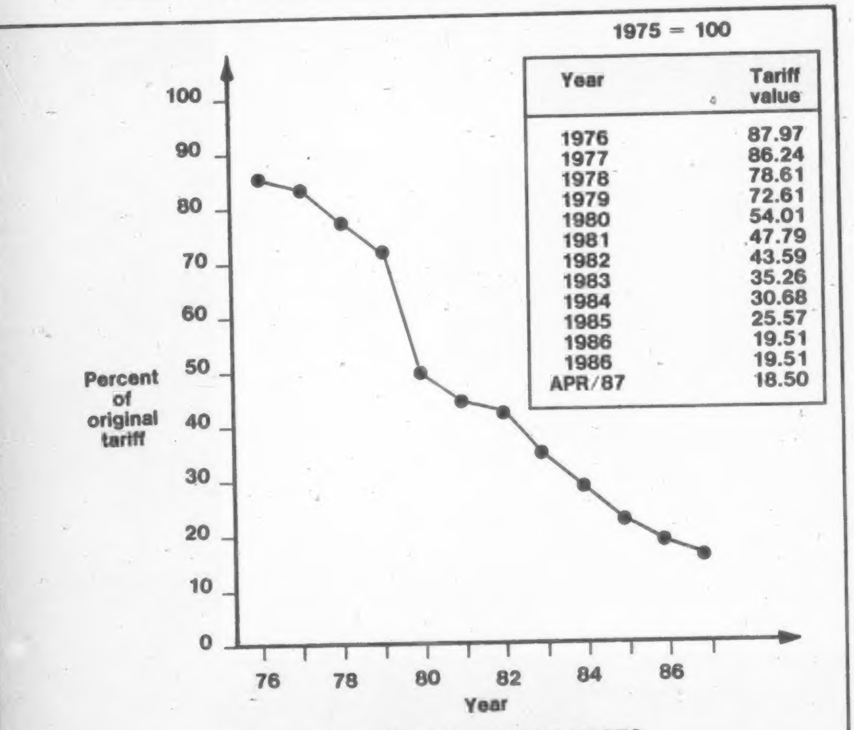
in 1967. It is now possible to dial direct to more than 50 different countries from Brazil; international traffic has increased over the same time period from virtually zero to 1.5 million calls.

Plans, Expectations

This glowing picture is one that hopefully will continue. Indeed, Brazil plans to have 25 million main lines installed by the year 2000, 17 million of which will be digital. (To date fewer than 1 million digital lines are installed.) Additionally, Brazil is considering debit card public phones, a 200-terminal very small aperture terminal network, and AMPS-standard cellular telephone systems for the cities of Rio de Janeiro, Sao Paulo and Brasilia. To this end, President Sarney's government has increased real investments in the telecommunications sector in the past three years from $800 million to a planned $1.4 billion for 1988.



Year	Tariff value
1976	87.97
1977	86.24
1978	78.61
1979	72.61
1980	54.01
1981	47.79
1982	43.59
1983	35.26
1984	30.68
1985	25.57
1986	19.51
1986	19.51
APR/87	18.50

FIGURE 1 INDEX OF TARIFF LOSSES

As is true for most developing countries, infrastructure achievements are sensitive to technical, economic and political factors. Brazil is no exception. However, while it focuses on acquiring state-of-the-art facilities and services such as digital switching, cellular radio and satellite, Brazil must recognize internal and external anomalies that have caused its recent growth.

Economic Impact

The volume of telephone calling increased more than 30% during Brazil's economic recovery in 1985 and 1986. This, coupled with the existing facilities' undersupply condition, saturated the domestic system. There was a deficit of 6 million lines in January 1987, which increased to about 9 million this past January. Even in Rio de Janeiro, for example, it can take several minutes to get a dial tone. Estimates are that the number of lines will have to increase to more than 27 million to eliminate current overload—well more than the 25 million goal set for the year 2000.

As already noted, the increases in demand for services are due to the general industrial growth in Brazil. However, major growth spikes have been a two-edged sword, leading to savage inflation.

Inflation has had two effects. The first has been to over-stimulate demand by effectively reducing the prices of telecommunications services in real terms, which has decreased the investment capital available for expansion. The second effect of inflation has been to reduce incentive for any external investment because a return on this investment is effectively reduced, if not eliminated.

The most recent data indicate that prices in Brazil rose almost 24% in July. This equals about 1200% per year. In addition, Brazil's foreign debt is about $120 billion and requires about half of its annual export earnings to cover its interest payments. Moreover, the government's budget deficit is 5.5% of its total domestic output—and growing. Thus, the Brazilian currency is being devalued at about 1% per day.

Meanwhile, internally developed funds from telecommunications operations are unavailable, a direct result of inflation. First, the government has appropriated any operating surpluses from its telecommunications companies to finance deficits in other sectors of the economy. Second, the rampant inflation has reduced the real price of services. This has artificially stimulated demand, causing saturation of the domestic system and the need for additional facilities. At the same time, cash flow for investment in the needed expansion has been reduced.

The effect of this inflation on prices can be seen in Figure 1. The effective price index (real value) of telecommunications prices decreased by 80% over the last 10 years and is still declining. Tariffs are now at the lowest level everywhere. For example, it costs about $1 per month for basic residential service, including the equivalent of about 90 local calls. Although some ground was recovered during the short-lived expansion in 1986, the current inflation rate in Brazil has more than offset those gains.

As noted earlier, these low rates have stimulated demand. Consequently, in 1986 4 million people were willing to pay $1000 to the

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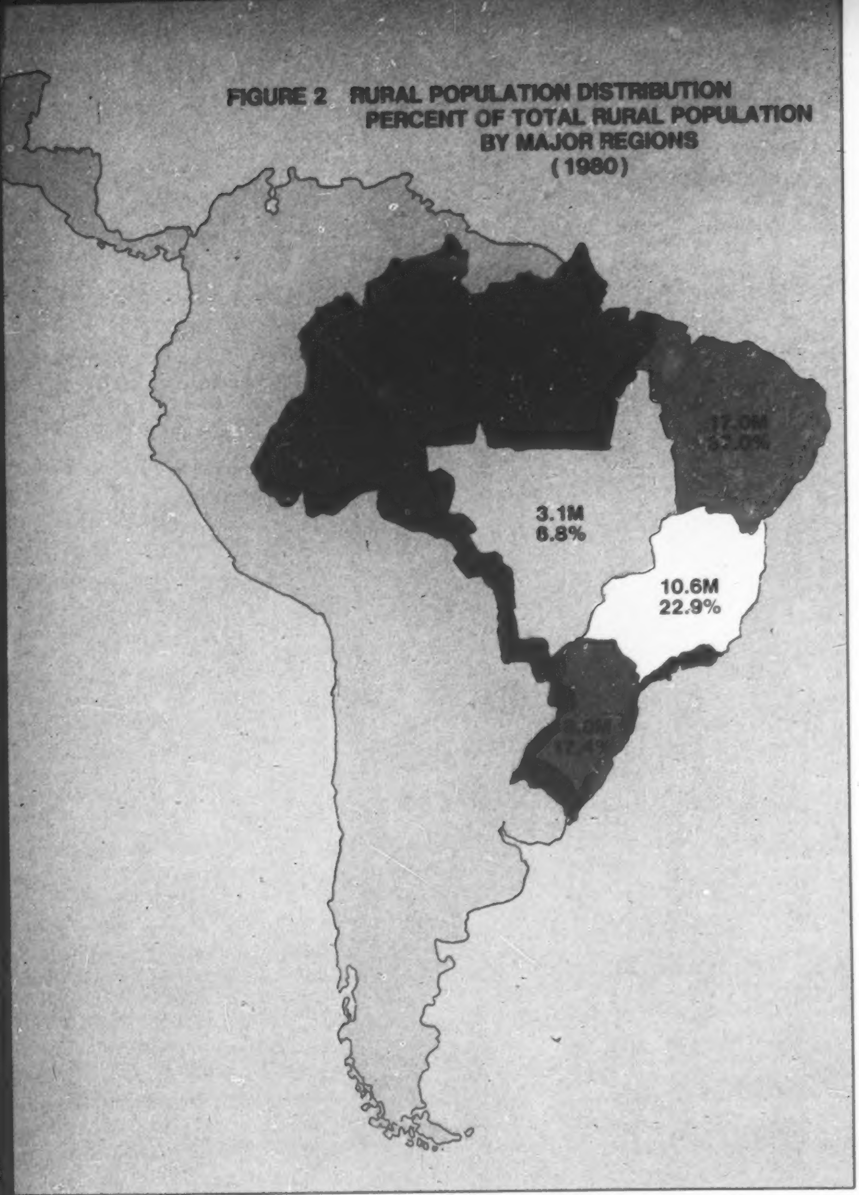

FIGURE 2 RURAL POPULATION DISTRIBUTION
PERCENT OF TOTAL RURAL POPULATION
BY MAJOR REGIONS
(1980)

Brazil *continued*

operating company for a line almost two years prior to any expected installation. In some instances, potential urban subscribers are known to have paid as much as $7000, while rural lines were unavailable at any price. The lower, official price is formally known as a "self-financing contribution," but it is a compulsory subscription to share ownership in the telephone company.

Rural Telephony

As difficult as it has been to maintain telecom services in cities, it has been even more difficult in rural areas. About 46 million people, or 31% of the total population of Brazil, is rural. The geographic distribution of the rural population is shown in Figure 2. These areas include 4200 cities and 4300 towns, 70% of which have fewer than 2500 people. Of this total, 1300 towns are not served at all. Current plans project service for these areas by 1990.

But if past rural objectives and achievements are a guide, these plans are not likely to be realized, especially in light of Brazil's current economic problems. In 1977, for example, the Ministry of Communications said that rural telephony would be one of its top priorities to support the government's agricultural effort. At the time, it estimated a need for 150,000 lines in rural areas. But by 1985 only 20,000 had been installed.

To underscore this active deficiency, a conference was held at the Pousada do Rio Quente in the state of Goia in Brazil. The conference was sponsored by the leading telecommunications publisher in Latin America, Revista Nacional Telematica and Grupo ABC, a Brazilian corporation that includes telecom engineering and manufacturing interests. At the meeting, representatives from the operating companies throughout Brazil, along with domestic telecom equipment manufacturers, discussed the increasing need for coverage to isolated areas in Brazil, as well as for upgraded services in areas that now have minimal service.

By developed country standards, these requests are modest. They include better quality high frequency circuits, full-duplex service, the ability to dial direct to the state and national capital, reliable 24-hour service and, eventually, service equal to that of the urban cities.

The participants also summarized the problems facing rural telecommunications, some of which are the same for the urban areas. These problems include:

- higher demand and necessarily high prices;
- high equipment and maintenance costs;
- low administered tariffs that limit returns for investment;
- insufficient telecommunications support to develop rural agriculture;
- limited funds and trained personnel for technology implementation; and
- legal restrictions for nongovernmental facilities development.

The results of the meeting culminated in a letter to the government re-emphasizing the importance of the rural agricultural activities to the Brazilian economy and the need for better telecommunications support to improve the efficiency of these activities. It also suggested several options to expedite this improvement. Among them were recommendations for various governmental ministries to pool funding for telecom development, the development of pilot projects such as time division multiple access and cellular radio, and expansion of private enterprise, including cooperatives and associations.

Liberalization

This last recommendation, if implemented, would be a major departure for Brazil. Currently, all aspects of telecommunications are regulated by the government under a law established by the National Congress in 1962.

The law provides the basic framework for governmental control of telephone, telegraph, telex, and data and satellite communications, though radio and TV are now private. The law established a Ministry of Communications and authorized a National Telecommunications Fund surcharge on all services, as well as subsequent governmental organizations.

Definitive operational and administrative control was established in 1965 with the formation of Embratel, the state-owned long-distance carrier. In 1972, the government formed Telebras, a federal holding company that controls 30 regional telcos and provides 95% of local phone service.

Telecom policies were reasonably successful under the military presidents between 1964 and 1985, largely due to the priority given to investment in the industry. The start-up of Telebras in 1972, whose mission was to update and develop public telecommunications, accelerated these successes without any government money. Financing for expansion was achieved through the tariff-rate structure and the FNT "self-financing contribution." In fact, the state-owned telecom companies were among the few profitable and efficient public sector concerns in Brazil.

The oil crisis of the mid-1970s and increasing foreign debt changed the Brazilian economy and the potential for internally financed telecommunications growth. The growing public-sector deficit and high interest on foreign debt forced the national treasury to use the telecom sector as a source of funding by levying special taxes and appropriating the Telebras surplus. This situation continues today.

The government is giving serious consideration to some form of privatization as a partial solution. Some decisions—at least in selected areas such as cellular radio—are expected this fall.

The Congress, the ministries and the constituents are divided on the practicality of expanding private enterprise for Brazilian telecommunications. One position is that private monopoly should take the place of state ownership; competition is unacceptable.

A second perspective is that it would be difficult to give private industry the approximately $20 billion in assets now owned by Telebras. Private enterprise has neither the money nor confidence to invest in a industry where service charges are not allowed to keep pace with inflation. The solution, therefore, would be a hybrid model in which Telebras would continue basic service operations, high-capacity regional microwave routes and international traffic while private companies would take over other services such as cellular, data communications and other enhanced services such as videotex and television.

Two other views also are prevalent. The first would see Telebras' operating companies shift toward private enterprise methods to accommodate future liberalization. The second would merely overhaul the companies' management.

Given these extreme points of view and the severity of the problems related to other significant economic and political issues, it may be premature to expect the current congress to make strides toward liberalization or privatization. The congress is more likely to maintain the current structure that gives the federal government the major decision role.

A decree was signed by President Sarney this month to consider letting private companies provide mobile phone services such as cellular radio in Brazil. It remains to be seen, however, to what extent such implementation will be realized. Substantial moves toward private enterprise are likely to take several more years. ■

Norman C. Lerner is President of Transcomm Inc., Falls Church, Va.

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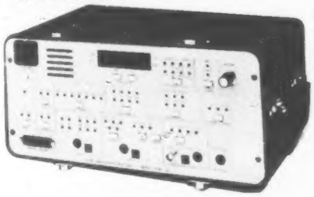

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